



Alcohol-free Sparkling Wine:
A customer segmentation and
analysis of factors influencing the
intention to adopt this innovation in
the German sparkling wine market

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Abstract

Title: Alcohol-free Sparkling Wine: A customer segmentation and analysis of factors influencing the intention to adopt this innovation in the German sparkling wine market

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Keywords: Non-Alcoholic, Sparkling Wine, Customer Segmentation, Target Group, Innovation Adoption, Influence Factors

In Germany, there is a major trend towards greater health, including campaigns such as "Dry January", in which people try to drink less alcohol (Schulz & Hanf, 2023). As a result, alcohol-free versions of drinks that actually contain alcohol are increasingly available on the market. However, Germany is in fact a country with a high per capita alcohol consumption. In this mixed situation, the market for non-alcoholic sparkling wine is growing, but not much information is yet available about it. Therefore, the aim of this thesis is to find out more about the customers and consequently create customer segments. Furthermore, the aim is to find out which factors have an influence on potential target customers to adopt this innovation. To this end, a literature review on the subject of the research is conducted based on the theory of customer segmentation and innovation adoption, before customer segments and factors influencing innovation adoption are identified with the help of a quantitative survey. This approach takes a holistic approach, with analogous consideration of related, innovative products such as non-alcoholic still wine. As a result, this thesis contributes to research by identifying four different customer segments for the non-alcoholic sparkling wine market based on purchase motives, such as beverage innovativeness or situational alcohol abstinence, and proves that gender, age and religious motives are decisive factors for the adoption of innovation.

Resumo

Título: Vinho espumante sem álcool: Uma segmentação de clientes e análise dos factores que influenciam a intenção de adotar esta inovação no mercado alemão de vinhos espumantes

Autor: Felix von Wietersheim

Palavras-chave: Vinho espumante sem álcool, Segmentação de clientes, Grupo-alvo, Adoção de inovações, Factores de influência

Na Alemanha, existe uma grande tendência para uma maior saúde, incluindo campanhas como o "Dry January", em que as pessoas tentam beber menos álcool (Schulz & Hanf, 2023). Como resultado, as versões sem álcool de bebidas que efetivamente contêm álcool estão cada vez mais disponíveis no mercado. No entanto, a Alemanha é, de facto, um país com um elevado consumo de álcool per capita. Nesta situação mista, o mercado do vinho espumante sem álcool está a crescer, mas ainda não há muita informação disponível sobre ele. Por conseguinte, o objetivo desta tese é saber mais sobre os clientes e, conseqüentemente, criar segmentos de clientes. Além disso, o objetivo é descobrir quais os factores que influenciam os potenciais clientes-alvo a adotar esta inovação. Para tal, é efectuada uma revisão da literatura sobre o tema da investigação, com base na teoria da segmentação dos clientes e da adoção da inovação, antes de se identificarem os segmentos de clientes e os factores que influenciam a adoção da inovação, com a ajuda de um inquérito quantitativo. Esta abordagem é holística, com consideração análoga de produtos inovadores relacionados, como o vinho tranquilo não alcoólico. Como resultado, esta tese contribui para a investigação, identificando quatro segmentos de clientes diferentes para o mercado do vinho espumante não alcoólico, com base em motivos de compra, tais como a inovação da bebida ou a abstinência alcoólica situacional, e prova que o género, a idade e os motivos religiosos são factores decisivos para a adoção da inovação.

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1. Introduction

In Germany, an average of 10 liters of pure alcohol (Olderbak et al., 2023) are consumed per capita annually. In international comparison, this makes Germany a country with high alcohol consumption (Möckl et al., 2023). How comes that people drink so much alcohol in Germany?

Not all consumers drink for the same reason. Common reasons include enjoyment as well as social influences from the environment (Kuntsche et al., 2005). Further, Perkins (2002) underlines that society and cultural norms, as well as traditions, favor consumption. Thus, alcohol is regularly offered at parties, and it is common to toast birthdays and other celebrations with a glass of sparkling wine. Drinking alcohol has been a part of German society for so long that traditional crafts, such as vintners and breweries, have been able to develop. In appreciation, the wine culture and craft beer brewing are regarded as a cultural heritage in Germany (German UNESCO-Commission, 2021).

Nevertheless, there is a trend in Germany to increasingly abstain from alcohol (Rummel et al., 2023). There are various reasons for this, such as the long-term negative effects of alcohol on the body. This takes place in the context of health-oriented consumption trends in society, which are realized in trends such as an alcohol-free month in January, the so-called "Dry January" (Schulz & Hanf, 2023). In the case of alcohol, long-term consequences of the consumption can be physical, psychological and social. Physically, alcohol consumption particularly attacks the heart, brain, and liver; consequences include strokes, dementia, and various cancers. Psychological effects can be depression or anxiety disorder. These can further have an impact on social life, relationships with partners, family and children, as well as on working life (Soyka & Küfner, 2011). To conclude, there are good reasons to abstain from alcohol consumption, at least in part.

Considering this, the trend to consume more non-alcoholic beverages (Dressler, 2018) is being countered by an industry rich in tradition. A split appears in these opposing forces, forms a market which can be subject to new, individual requirements. The market for non-alcoholic beer is leading the way, with non-alcoholic alternatives already accounting for 7.2% of the entire German beer market in 2022. It should be emphasized that the market for non-alcoholic beer has doubled since 2003, while overall beer sales have declined (Statista, 2024). A similar dynamic with increased demand for non-alcoholic variants can also be observed in the much smaller German sparkling wine market (Deutsches Weininstitut, 2023a).

Social trends thereby repeatedly require companies to adapt to changing customer preferences with innovations (Pascucci et al., 2023). Further, innovations play a decisive role for companies in adapting to changing customer preferences (Diamantopoulos et al., 2012). This also applies to the non-alcoholic beverage alternatives sector, which consumers perceive as quite novel.

To be successful on the market in the long term, the innovations must be preferred and accepted by the target groups on the market. To achieve this, it must be possible to clearly identify the target segments at first, whereby the customer groups of alcoholic beverages cannot simply be adopted (Castellini & Smogia, 2018). Once the target groups have been defined, it is crucial for the economic success of a company that the customers also accept the innovation. It is therefore important to find out which factors influence the adaptation of the new product to manage marketing activities in a targeted manner.

The aim of this thesis is therefore to define target segments for non-alcoholic sparkling wine in Germany and further to find influencing factors that affect the adaptation of this innovation by customers. This results in the following two research questions:

***RQ1:** How can the potential target segments, in the age group between 20 and 60, be characterized for alcohol-free sparkling wine, how do they position themselves and what characteristics do they value?*

***RQ2:** What are factors that influence the adoption intention of potential customers for non-alcoholic sparkling wine?*

To this end, the theoretical basis for the target group analysis and innovation adaptation is discussed below. Based on this, the scientific study is then outlined before a theoretical and empirical investigation of the research object is conducted.

2. Literature Review

This chapter covers the relevant terms and theories on which this work is based. First, the concept of the object of research, non-alcoholic sparkling wine, and then the corresponding market of interest are examined. Furthermore, the economic theories of market segmentation and innovation adoption are discussed.

2.1. Clarification of the Term Alcohol-Free Sparkling Wine

The EU provides a harmonized wine legislation through the Regulation of the European Parliament and of the Council of 17 December 2013 establishing a common organization of the markets in agricultural products (EU/1308/2013), where the term "sparkling wine" is clearly

defined in the chapter "Categories of Sparkling Wine" under numbers 4 to 7. Additionally to the general term "sparkling wine", distinctions are made between "quality sparkling wine", "quality aromatic sparkling wine" and "aerated sparkling wine" under numbers 5-7. The first three product categories share next to other specifications, the defining characteristic of being products obtained from the first or second alcoholic fermentation of fresh grapes, grape must, or wine, which release carbon dioxide upon opening and exhibit an overpressure due to dissolved carbon dioxide in closed containers at 20°C. aerated sparkling wine, on the other hand, does not have to be obtained from the from the first or second alcoholic fermentation, but from a wine in general.

These regulations are implemented in the countries through national laws, in Germany via the Wine Law (german: Weingesetz) and the Wine Ordinance (german: Weinverordnung), along with the corresponding implementing regulations. According to § 47 paragraph I of the German Wine Regulation (WeinV) effervescent beverages made from dealcoholized wine are understood as such if they contain less than 0.5 volume percent alcohol and are appropriately labeled. These may be referred to as "alcohol-free".

2.2 Market Overview

The market development of non-alcoholic sparkling wine is influenced by various developments. Thereby, a comparison with the markets for alcoholic beverages regularly receives special attention in the analysis of alcohol-free variants (Association of German Sparkling Wine Cellars, 2024a). Since the turn of the millennium, there has been a decline in per capita alcohol consumption in Germany. The German Centre for Addiction Issues (german: Deutsche Hauptstelle für Suchtfragen) has recorded a decline in per capita consumption of pure alcohol in Germany among over 15-year-olds from 12.00 liters in 2000 to 10.00 liters in 2020 (John et al., 2023).

Year	2000	2010	2012	2014	2016	2018	2020	2021
Beer	125,5	107,4	107,3	106,9	104,1	102,0	94,6	91,6
Sparkling Wine	4,1	3,9	4,2	3,9	3,7	3,4	3,3	3,2

Figure 1: Per capita consumption of beer and sparkling wine (liters of finished product), own illustration (ifo-institute, 2022).

This development can also be observed on a product-specific level. A comparison with the beer market is particularly revealing, as non-alcoholic variants have already achieved significant market penetration there. As shown in Figure 1, per capita consumption of beer has fallen by around 27% since 2000 and that of sparkling wine by 22% by 2021 (ifo-institute, 2022).

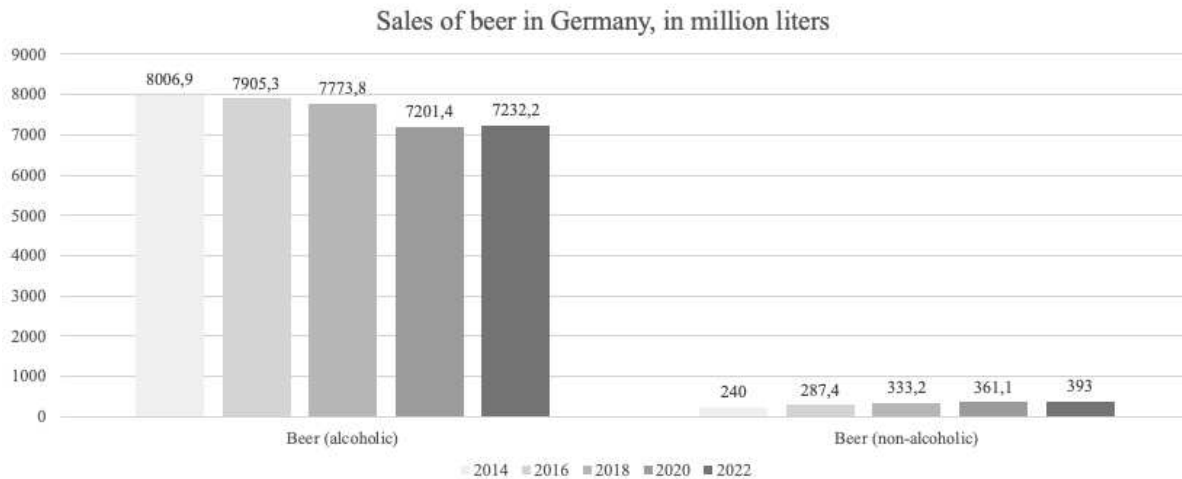


Figure 2: Sales of beer in Germany 2014-2022 in million liters, own illustration (Eberl, 2023).

This decreasing consumption is also reflected in the sales figures, although an opposing trend can be observed: The consumption of non-alcoholic beer is increasing, while that of alcoholic variants is declining. In the period from 2012 to 2022, the production of non-alcoholic beer rose significantly from 242.0 million liters to 574.1 million liters, which corresponds to an increase of 96% (Federal Statistical Office, 2024a). In summary, it can be stated that despite the decline in demand for alcoholic variants, the market for non-alcoholic beers is experiencing continuous growth.

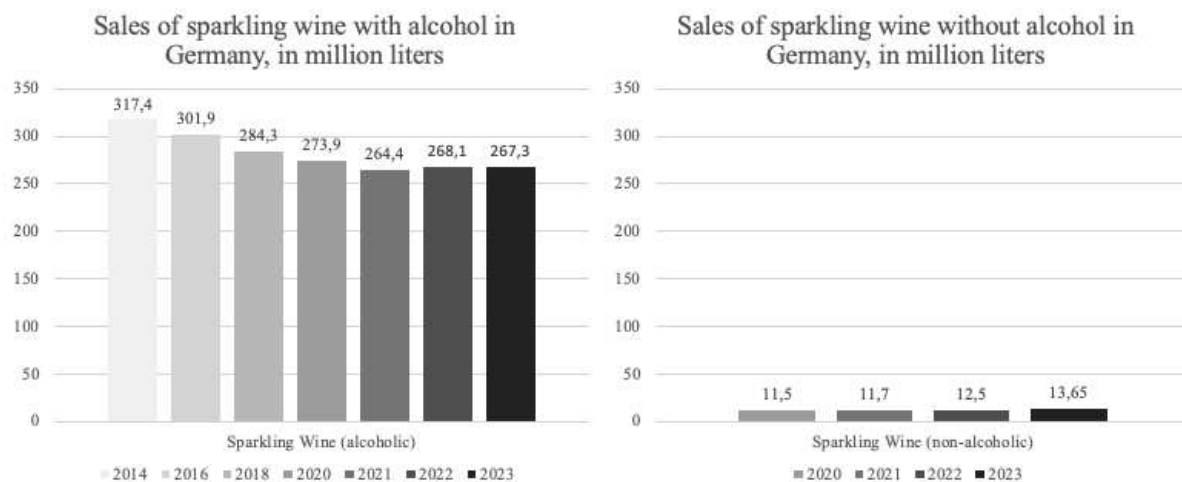


Figure 3: Sales of Sparkling Wine in Germany 2014-2023 in million liters, own illustration (Federal Statistical Office, 2024b; Association of German Sparkling Wine Cellars, 2024b).

A comparable trend can also be seen in the sparkling wine market. The validity of the data on sales of sparkling wine containing alcohol is strengthened by the specific sparkling wine tax levied in Germany (Federal Statistical Office, 2024b). However, the data on non-alcoholic sparkling wine, provided by the Association of German Sparkling Wine Cellars (german:

Verband Deutscher Sektkellereien), is not available for the years before 2020, as illustrated in Figure 3. This parallel development in both markets indicates a comprehensive trend that is not limited to the sparkling wine market. According to the German Wine Institute (german: Deutsches Weininstitut), sales of non-alcoholic sparkling wines amounted to 91 million euros in 2022 (GERMAN WINE INSTITUTE, 2023).

The market structure for sparkling wines is dominated by major brands, with seven producers having a combined market share of over 85% (Dressler, 2018). In total, there are 998 producers of sparkling wine in Germany with an alcohol content of over 6% (Federal Statistical Office, 2024b). No comprehensive market analyses are yet available for non-alcoholic sparkling wines. Cathrin Duppel, Head of Marketing at Rotkäppchen-Mumm, reports a market share of 38% in 2022 (Sommerparty ohne Promille, 2023). The German Wine Institute has further identified a trend towards premiumization in non-alcoholic sparkling wines (Büscher, 2023), which is being exploited in particular by young companies such as Kolonne Null GmbH, which define themselves through brand positioning.

To summarize, the market for non-alcoholic sparkling wines is showing stable growth that is not following the negative trend of alcoholic variants. This development, similar to the dynamics in the beer market, opens up new business opportunities.

2.3 Target group segmentation

In line with the first research question, market segmentation plays a key role in defining target groups for non-alcoholic sparkling wine. This chapter aims to clarify the terminology used and to present the current state of scientific knowledge and the relevant forms of segmentation criteria. It forms the basis for applying the defined segmentation approaches to the developing market for non-alcoholic sparkling wines in the following chapters and to develop criteria that are necessary for an effective target group approach.

2.3.1 Definitions of terms

Market segmentation means the division of an overall market into groups (market segments) that are as homogeneous as possible internally and as heterogeneous among each other as possible in terms of their market response, as well as the treatment of at least one of these market segments (Dolnicar et al., 2018). In this sense, a **target group** is a segment that is to be addressed with a marketing strategy. (Diamantopoulos et al., 2012). Contrary to some long-held opinions (Frank et al., 1972), the marketing-specific treatment of segments is also part of market segmentation. The terms market segmentation and **target group segmentation** can be

used synonymously (Diamantopoulos et al., 2012). The aim of target group segmentation is to achieve a high level of coverage between the product or service offered and the needs of the target groups (Meffert et al., 2019).

The segmentation process is usually an empirical, statistical procedure in which data from current and potential consumers is collected and analyzed (Homburg, 2012). With the help of **factor or cluster analysis**, the segments can be formed and described.

As a result, a company's sales can be increased through a targeted approach and a targeted marketing budget (Thach & Olsen, 2006). Creating a relevant database is therefore an essential part of target group segmentation (Dolnicar et al., 2018). Due to resource efficiency, not every customer can be addressed individually, which is why in reality a balance is maintained between the individual processing of the target customer and profitability (Bruwer & Li, 2007).

2.3.2 Development of market segments

To process the information collected, various segmentation criteria can be used to characterize and differentiate between target groups (Homburg, 2022). The multitude of potential criteria and their selection is a constant source of debate for academics and companies and is a constant subject of research. The first contributions to market segmentation date back to the 1950s and originated from economic considerations of market segmentation (Hummel, 1952; Smith 1956). Despite the different approaches that followed, the basic idea has always remained the same: a market is made up of different consumers, each with different needs, which allows a market to be divided into submarkets (Diamantopoulos et al., 2012). Accordingly, a market must first be defined to form target segments. The literature distinguishes between supply-side and demand-side approaches to market definition (Elizalde, 2021). Once the market has been defined, the segments can be formed. The aim is to form groups in which consumers in the same segment show similar reactions to marketing activities (Meffert et al., 2019).

Requirements for the criteria of segmentation are, on the one hand, the appropriateness of the market division and, on the other hand, the narrowing down of the possible criteria among the multitude of possible characteristics (Homburg, 2012). In the literature, there are various approaches to grouping the criteria (Frank et al. 1972; Stegmüller, 1995; Homburg, 2012); in this case, a distinction is made between geographical, socio-demographic, psychographic and behavioral criteria for market segmentation. An overview of this is shown in the following Figure 4.

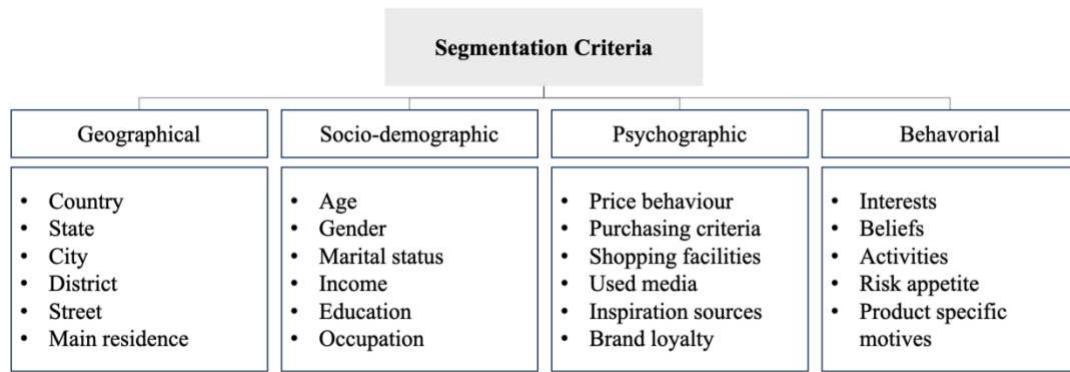


Figure 4: Segmentation Criteria, own illustration (Meffert et al., 2019; Amann, 2022).

The geographical segmentation criteria are often the first and simplest foundation to lay. Consumers can be sorted into segments at different levels according to their main place of residence (Diamantopoulos et al., 2012).

Socio-demographic segmentation criteria are also characterized by a relatively low threshold and additionally high stability and are therefore regularly part of a target group segmentation (Pomarici et al. 2017). Socio-demographic segmentation criteria differ in demographic characteristics, such as age and gender, as well as socio-economic characteristics, such as education and income. The exclusive use of socio-demographic criteria is described as "classic market segmentation". However, due to the low informative value regarding the purchasing relevance of the characteristics, a combined approach with other segmentation criteria is increasingly being chosen today (Vossebein, 2000; Meffert et al., 2019).

This gap is closed by psychographic segmentation criteria, which provide insights into the underlying personality traits and attitudes of consumers. These have proven to be particularly helpful in predicting consumer behavior (Homburg, 2022). However, psychographic segmentation approaches are significantly more complex than geographical and socio-demographic segmentation, as they consist of many individual factors that influence attitudes or motives (Dolnicar et al., 2018).

Behavioral segmentation approaches refer to actual consumer behavior and preferences during the consumption process, including product purchase (Arnold & Fleuchaus, 2011). However, this data is not immediately available, especially from potential customers who have not yet purchased the product (Dolnicar et al., 2018). Furthermore, they do not represent the reasons or motives behind the behaviors (Homburg, 2022).

2.3.3 The problem of optimal target group segmentation

Market segmentation consists, as mentioned, of the segmentation itself as well as the subsequent selection of target groups and the design of the marketing instruments to be selected, the market cultivation. The complexity of market segmentation therefore consists of the interdependence of market identification and cultivation. The optimal segmentation achieves the highest intended degree of achievement of objectives, such as the highest possible contribution margin from marketing activities (Meffert et al., 2019). The solution to the problem structure is illustrated in the literature by mathematical functions that require the quantification of all variables, even those that are difficult to measure, such as product quality. However, these are merely formal solutions to optimal market segmentation, whose actual applicability and validity is limited in reality (Claycamp & Massy, 1968; Winter, 1979).

In summary, it is obvious that the various segmentation criteria have different advantages and disadvantages. Geographical and socio-demographic approaches are easy to survey and are characterized by a simple division of target segments, although their statement of purchasing behavior is limited. In contrast, behavior-based and psychographic segmentation criteria are characterized by a high degree of relevance to purchasing behavior. However, they are more difficult to collect and targeting specific target groups is more challenging (Homburg, 2022). To resolve the conflicting objectives, more and more researchers are therefore combining different approaches. (Pomarici et al., 2017) To this end, either several segmentation criteria are used for identification from the beginning, or the target group is formed based on one segmentation criterion and subsequently described using a variety of other criteria (Homburg, 2022).

2.4 Innovation adaptation

Despite recurring examples on the markets and a high research intensity, innovative products repeatedly fail on the market. This can have different reasons and happen in different phases in the framework of innovation management (Gielens & Steenkamp, 2007). Therefore, the understanding of innovation and the factors influencing innovation adoption is of current importance in research and practice (Reinhardt et al., 2017). For this paper, innovation adoption and the factors influencing it are of particular interest. Therefore, the concept of innovation is defined below and possibilities for categorizing innovations are shown before the innovation process is described with a focus on adaptation.

2.4.1 Definition of innovation

Schumpeter's states in his economic theories (1912) that innovation is the most important driver of economic growth, which lead to fundamental consensus in the economic science. Later, the term innovation has become increasingly widespread since the 1950s (Popplow, 2021). However, although the term has become so widespread, the academic literature has not yet been able to agree on a consensual definition (see various definitions in the table in Appendix I). Over time, however, some dimensions have emerged that make up the core of the concept of innovation. An innovation therefore always includes a perceived novelty (1) and a positive benefit contribution (2) from the perspective of a certain group of people (3). Furthermore, an innovation can relate to different aspects (4) and is always based on a multi-stage process that includes the generation of ideas and their implementation on the market (5) (Amann, 2022; Schumpeter 1912).

2.4.2 Categorization of innovations

In common scientific literature, innovations are essentially categorized according to the innovation type and degree of innovation.

The **type of innovation** refers to the aspect that the innovation affects. In the business environment, a distinction is essentially made between product, service, process and business model innovations. These innovation types have in common that the aim is usually to create economic added value for companies (Horeth, 2021).

The **degree of innovation** refers to the extent of novelty and is measured against the status quo prior to the introduction of the innovation. Since the 1990s (Acemoglu, 2022), a distinction has usually been made between incremental (continuous) innovations and radical (fundamentally new) innovations (Meffert et al., 2019). Radical innovations are characterized by a high degree of novelty and often take the form of introducing products, services or processes to the market for which there was previously no immediate demand, such as the internet or the smartphone. Incremental innovations are small, less novel changes that usually serve an existing demand (Acemoglu, 2022). In addition, there are multi-level differentiations in literature in which the degree of novelty is more narrowly defined (Horeth, 2021).

All in all, it should be noted that there are various ways of categorizing innovations. It should always be borne in mind that the categories are only ideal-typical guidelines for differentiating innovations, and their boundaries often become blurred in reality (Horeth, 2021).

2.4.3 Innovation process with focus on innovation adoption

In research, the procedure of innovation is systematized with the help of phase models, whereby the relevant literature provides different variants. These can differ in terms of the level of detail, the scope and the naming of the phases. What they have in common, however, is that they are ideal-typical representations of phases whose sequence is not always adhered to in reality; there may be leaps and repetitions (Rogers, 2003; Horeth, 2021).

Due to the variety of existing models, a summarized innovation process is described here, which was derived from the models in Appendix II. This process comprises the following phases, which, in the light of this paper, are discussed below in the context of product innovation.

1. Problem or need identification
2. Idea and selection
3. Research, development and production
4. Market launch and market cultivation
5. Innovation adoption and diffusion
6. Result (success or failure of the innovation)

The process begins with a problem or need identification. The analysis of external factors, such as trends, market developments and new technologies, plays a particularly important role here (Homburg et al., 2022). Often it makes sense to integrate affected groups of people directly into the innovation process (Horeth, 2021).

The idea generation and selection phase are about possible solutions for the identified problem or need, which a company searches for, analyzes, and evaluates. The evaluation can be made according to individually definable criteria, such as technical feasibility or economic potential (Rogers, 2003) before decisions have to be made as to which innovative ideas are to be pursued further (Shane, 2009). This is a critical step in the innovation process that requires a structured approach and initial assessment on the part of the company (Wegmann, 2020).

The next phase is research, development and production. This is where the knowledge required for the concrete implementation of the idea is first generated and provisional results are gradually brought to product maturity (Horeth, 2021). At the end of this process, the amount of coverage of the product with the identified needs should be as high as possible (Rogers, 2003). The product is then manufactured using either internal or external resources (Horeth, 2021).

The product is then launched on the market and marketed. Knowledge about the identified, characterized and selected target groups is particularly important at this stage (Dong & Rashkova, 2022). This is where market development in terms of target group segmentation comes into play. However, a significant proportion of product innovations fail due to incorrect or inadequate implementation of precisely these marketing activities (Horeth, 2021).

The market launch is followed by the innovation adoption and diffusion phase, which is of key importance for this study. Innovation adoption refers to the decision of consumers to fully accept an innovation (Rogers, 2003; Arts et al., 2011). Various factors play a role here, such as the perceived novelty and the degree of uncertainty associated with it among consumers (Rogers, 2003). In any case, adaptation is based on a complex and multi-stage process on the part of the consumer (Arts, 2011). For this process, modern scientific literature generally refers to Rogers' (2003) model of the innovation decision-making process, which systematizes the decision-making process in the innovation context from the perspective of the individual. The first step is Knowledge (1), in which the individual gains knowledge about the innovation (Rogers, 2003). In the Persuasion (2) step, the individual forms their positive/negative opinion and attempts to gain further knowledge about the innovation, e.g. through customer reviews (Rogers, 2003). In an optional phase, Trial, the individual tests the product before making a decision (3), which results in either an intention to adopt or reject the innovation (Arts et al., 2011). The adoption intention can then lead to implementation (4) through purchase, consumption or use of the product. Some researchers also conclude that there is still an activation phase (5), which includes reflection on the decision (Eckhardt, 2015) and may subsequently lead to discontinuation of consumption (Rogers, 2003).

In practice, the process is individual, and the phases can be interrupted at any stage of the process and the boundaries between the phases become blurred (Rogers, 2003). Furthermore, the individual processes are influenced by different factors. For example, mass media have a major influence on knowledge (1) and interpersonal communication sources on persuasion (2) of the innovation (Rogers, 2003; Homburg, 2022). Knowledge of the influencing factors is therefore also crucial in influencing the intention to adopt and thus the decision to innovate (Dong & Rashkova, 2022). Previous publications have already revealed that, on the one hand, the perceived characteristics of the product innovation and, on the other, the characteristics of the consumer and external factors influence the individual steps (Reinhardt et al., 2019).

The final steps (4 and 5) of the innovation decision process are the transition from the individual perspective of innovation adoption to diffusion, which concerns the spread within a user group or a market and goes beyond the individual perspective of innovation adoption (Ottosson, 2019). At this stage, individuals who have already adopted an innovation influence other individuals who are less advanced in the innovation decision process (Rogers, 2003). Here, interpersonal communication plays a greater role than objective product characteristics (Rogers, 2003; Ottosson, 2019). Rogers (2003) depicts the ideal-typical course of diffusion as pointed out in Figure 5.

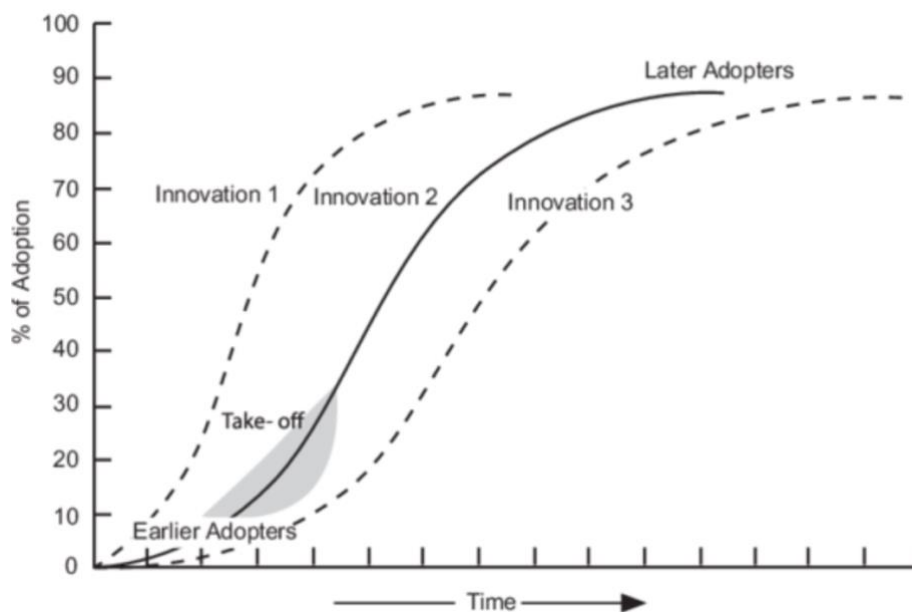


Figure 5: Process of Diffusion (Rogers, 2003).

The vertical axis of the graph shows the adoption rate, which indicates the proportion of individuals who adopt an innovation. On the horizontal axis is the time course that begins with the introduction of the innovation to the market. The cumulative number of individuals who adopt the innovation leads to the S-shaped diffusion curves over time. After initially low adoption by early adopters following the market launch, the curve rises as more and more individuals adopt the innovation over time. The gradient has its maximum in the so-called Take-Off-Phase. As soon as half of the individuals in a social system have adopted an innovation, the adoption rate decreases again, as fewer and fewer individuals remain who can still adopt the product innovation, until no more individuals adopt the innovation, there is no more gradient and thus the diffusion process is complete. The different S-curves in the diagram illustrate that this process can be of varying duration.

The following innovation result indicates the success or failure of a product innovation and is closely related to the extent of diffusion. The assessment is usually made individually depending on a company's objectives, such as profit or number of new customers (Rhaiem, & Amara, 2021).

3. Methodology

The intended data basis for analyzing the research question can first be divided into primary and secondary data. An investigation of secondary data is the first step in data collection and essentially involves research from internally and externally available sources of information. If the information from secondary research is not sufficient to answer the research questions, it is necessary to collect the required data originally. This is done through primary research. The analysis of the newly collected data is then intended to fill the research gap that the thesis aims to close. To this end, in the course of this work, hypotheses are derived from the theoretical research directly in order to be tested empirically.

The general methodological approach as well as the methods for secondary and primary data collection as for data analysis are explained in detail below. During this process, the quality criteria of reliability, validity, reactivity, and objectivity are considered consistently when selecting the methods of information collection and sources used in this thesis (Meffert et al., 2019).

3.1 Methodology of secondary research

Due to the wide availability of access to academic literature through digitization, it is possible to review a large amount of literature quickly and easily. The task here is to filter out the essential literature from this flood of information in a structured and comprehensible way. In this case, the two research questions form the starting point for targeted literature search:

***RQ1:** How can the potential target segments, in the age group between 20 and 60, be characterized for alcohol-free sparkling wine, how do they position themselves and what characteristics do they value?*

***RQ2:** What are factors that influence the adoption intention of potential customers for non-alcoholic sparkling wine?*

The aim of this theoretical analysis is to summarize and classify the current state of research in the context of this study. In this way, the scientific frame of reference can be established for the

identification of research gaps, the following hypotheses and the development of the empirical research design of this thesis.

The literature research begins with a brainstorming phase in which overarching topics and relevant search terms were collected for the first and second research question. In the next step, the search terms were used to search for scientific sources in Google Scholar, Web of Science and Veritati portals of the Universidade Católica Portuguesa as well as for additional valid specialist expertise, such as articles, press releases or statistics in the regular Google search and websites of institutions in the context of the study, in German and English. The sorting, assessment and selection were based on the professional proximity of the sources to the research subject and compliance with the quality criteria listed above.

Due to the explorative character and already in-depth insights of the literature, there is a sufficient understanding for the comprehensible creation of a quantitative primary research. In this case, relevant hypotheses can already be derived from the profound secondary research, which can then be tested quantitatively. A qualitative method in the sense of a preliminary study can therefore be dispensed with.

3.2 Methodology of primary research

The design of the primary research is based on the current state of scientific knowledge and the corresponding identification of the research gap.

In the following, the conception of the empirical research design, the sample selection and the questionnaire as well as the methods for analysis the data are discussed.

3.2.1 Conception of the research design

In marketing research, the survey is the most common method of obtaining information (Homburg et al. 2022). Thus, a representative sample of the population is sought through a survey. This is used for subsequent data analysis of individual variables and cause-and-effect relationships. After all, this should make it possible to test the hypotheses of the research subject.

For this thesis, the consumer survey is conducted as an online survey due to time, methodological and financial aspects. This method has a number of advantages and is widely used both in business and in academic research (Taddicken, 2009). It allows participants to be addressed cost-effectively and quickly across temporal and spatial differences. Another advantage is the possibility of setting questions as mandatory to answer, as well as including

filter questions and questions to check attention. This enables a high quality of the data set (Meffert et al., 2019). However, it should be noted that people without internet access cannot be reached and could therefore be underrepresented. This means that only the German online population can be covered. However, with a coverage of 93% of the population with internet access in 2022, this limitation is regularly accepted (Rabe, 2024; Dolnicar et al., 2018). In addition, the survey may have to accept that response rates may be low and that information about the population, participants and completion situation may be limited (Meffert et al., 2019).

3.2.2 Sample selection and questionnaire development

Sample selection plays an essential role in obtaining a result that is as representative as possible. The aim of the sample is to represent the population of around 70 million people aged 18 and over in Germany as accurately as possible (Federal Statistical Office, 2023a). Taking into account a margin of error of 5% and a confidence level of 95%, the survey should therefore achieve a minimum sample size of $n = 385$ (Diamantopoulos et al., 2012). In addition, certain characteristics of the population should be used via quotas to ensure representation (Stein, 2022). Age and gender are used here as quota characteristics of the quantitative survey. This ensures the highest possible representation of the potential target groups.

The questionnaire is created and distributed using Qualtrics software. The total number of questions in the survey is kept as low as possible to ensure high data quality. The survey is divided into a block with more general introductory questions and the quota-questions, followed by a more in-depth main section, before socio-demographic data is requested in the final section. To ensure the most accurate data collection and analysis possible, rating and Likert scales are used for the most part to obtain metric data (Homburg, 2012).

3.2.3 Analysis of the collected data

After the collection, the data is analyzed to test the hypotheses and answer the research questions. For this purpose, the statistical program IBM SPSS is used.

In the first step of the analysis, the data material is screened and cleaned. This involves naming the data variables and removing unusable data from the database. In the second step, descriptive statistical methods are used to visualize and analyze the data for the first time to obtain an initial overview of the data. Therefore, classical methods are univariate methods to record results such as mean values or frequencies and enable a visualization in tables or diagrams (Dolnicar et al., 2018). In the third step, multivariate analysis methods, such as factor or cluster analysis, are

used to find common influencing variables or a natural systematics by evaluating a large number of variables (Diamantopoulos et al., 2012). In the fourth step, bivariate analyses, such as regression analysis, are used to examine the relationships between two variables.

4. Results

This chapter is structured according to the research design into the results of the secondary and primary research. The results of the secondary research are discussed first, as they form the basis for the expected results of the primary research. This is followed by the results from the analysis of the self-conducted survey.

4.1 Results of the secondary research and implications for primary research

This chapter builds target group segmentation and the concept and process of innovation presented in the literature review. It aims to analyze the object of research with regard to these concepts and to make the insights gained usable for the design of the primary research.

4.1.1 Classification of non-alcoholic sparkling wine as an innovation

The following chapter is dedicated to examining the innovative character of non-alcoholic sparkling wine, based on the previously defined concepts of innovation and their categorization and degree. According to the definition set out in chapter 2.4.1, an innovation always requires perceived novelty (1) and a positive benefit contribution (2) from the perspective of a certain group of people (3). In addition, innovations result from a multi-stage, cumulative process.

The initial focus is on the aspect of novelty. The decisive factor for classification as an innovation is not the objective novelty of the product, but the subjective perception of novelty in the sense of the innovation definition. This aspect is underlined by a consumer survey in which 47% of respondents (n=16,883) stated in 2020 that they did not know that non-alcoholic sparkling wine existed (Nielsen, 2020). Another study by Szolnoki, Kiefer & Tracer (2023) found that in 2023, 56% of respondents had never tried non-alcoholic sparkling wine. In light of this data, it can be concluded that non-alcoholic sparkling wine is perceived as novel by a large proportion of consumers.

The analysis of the novelty of non-alcoholic sparkling wines makes it clear that the subjectively perceived novelty meets the requirements of the definition of innovation. The findings from the aforementioned consumer surveys confirm that a significant proportion of the target group regards non-alcoholic sparkling wine as an innovative option in the beverage market.

Regarding the degree of novelty of the alcohol-free variants, there is disagreement in the scientific community as to whether the an alcohol-free variant is a radical or incremental innovation. The dividing point in the discussion is the novelty of the technology (Boshuizen, 2020). However, it is not necessary to decide whether the innovation is radical or incremental, as the product is novel in either case. At the very least, it is an incremental innovation.

The second defining criterion for innovation is the positive benefit contribution, which is particularly significant in the case of non-alcoholic sparkling wine. In view of the negative effects of alcohol consumption highlighted in the introduction and the current trend towards a more health-conscious lifestyle, the positive benefit contribution of non-alcoholic sparkling wine is confirmed. This contribution manifests itself not only in the reduction of health risks associated with the consumption of alcoholic beverages, but also supports the desire of many consumers for a healthier alternative without restricting their enjoyment (Schulz & Hanf, 2023; Soyka & K ufner, 2011). As result, this criterion must be confirmed.

According to the definition of non-alcoholic sparkling wine in chapter 2.1, sparkling wine can be defined as a product and therefore the innovation falls into the category of product innovation. The innovation process can also be applied to non-alcoholic sparkling wines. With a growing, dynamic market, sparkling wine products are at different stages of the innovation process, whereby some products have already been launched on the market.

In summary, it can be said that non-alcoholic sparkling wine meets the requirements of the definition of innovation. Non-alcoholic sparkling wine has a perceived novelty and a positive benefit contribution for potential target groups. As a product innovation, non-alcoholic sparkling wine has completed key steps in the multi-stage innovation process and is already ready for the market.

4.1.2 State of research in the context of the study

The aim of this chapter is to summarize the relevant previous research for the research topic. A literature review is carried out for each of the two research questions RQ1 and RQ2. In this way, the research gap is identified, and the added value of this work is clearly defined and demonstrated.

4.1.2.1 Customer segmentation for non-alcoholic sparkling wine in Germany

First, a systematic literature review was conducted on research question 1. The aim of this literature search is to identify academic literature that can provide concrete evidence to answer the research question. The reference point for the review is the research question:

***RQ1:** How can the potential target segments, in the age group between 20 and 60, be characterized for alcohol-free sparkling wine, how do they position themselves and what characteristics do they value?*

Sparkling wine is consumed in different social classes on a variety of occasions, including both special and everyday events such as birthdays or national holidays (Dressler, 2018). This diversity in consumption habits is reflected in a wide range of consumer segments. It is therefore crucial for companies to define clear target groups in order to effectively align their market cultivation with the needs and preferences of these consumers.

In the systemic literature review, it is evident that research to date has concentrated on the sparkling wine market in Germany as a whole, without focusing on differentiation according to the non-alcoholic variant. In addition, it is also noticeable that the sparkling wine market is regularly only considered as one segment in the analysis of the German still wine market (GERMAN WINE INSTITUTE, 2023; Dressler, 2018). Nevertheless, a target group study exclusively for sparkling wine was identified from Müller (2006). There, consumers (n=1,029) are divided into 6 segments based on the criteria of flavor type, brand, price, fermentation method, vine variety, country of origin of base wine and origin of producer. Adapting these customer segments of the conventional product to the non-alcoholic variant is not expedient, due to the novelty and difference described as well as the new added value of the product, outlined in chapter 4.1.1.

In conducting the literature research, it becomes clear that previous economic research on non-alcoholic sparkling wines is limited. The reason for this could be the current market volume of 91 million euros. In order to expand the evaluation possibilities, the topic of the literature research is extended to other non-alcoholic products in the sparkling wine market. Such different, potentially innovative variants of sparkling wine are rosé sparkling wine, organic sparkling wine or sustainable sparkling wine. With the extension of the evaluation horizon, it is possible to identify another study, Szolnoki et al. (2023).

The reason for this starting point of the literature research is the fact that the sparkling wine market is regularly perceived as a sub-market of the entire wine market, i.e. including still wine. The known findings on the smallest possible matching market segment are presented before the object of research is expanded further.

The representative survey by Szolnoki et al. (2023) originally focused on the entire sparkling wine market. There, the authors attribute only minor significance to the trend towards low-alcohol or alcohol-free sparkling wine within the overall market. Szolnoki et al. (2023) consider the consumers of non-alcoholic sparkling wine exclusively on the basis of social demographic factors. Overall, they come to the conclusion that women are more accessible to the non-alcoholic variant than men. The proportion of respondents who had ever tried non-alcoholic sparkling wine was 44% overall, compared to 54% of women. The number of respondents who have already tried non-alcoholic sparkling wine decreases with increasing age.

As the sparkling wine market is regularly regarded as a sub-market of the conventional still wine market, as already indicated, the literature research was expanded accordingly. As a result, three publications were identified that address customer segments for innovative still wine products in Germany. These are a publications by Klohr, Fleuchaus & Theuvsen (2014) on sustainable wine, by Janssen, Schäufole & Zander (2020) on organic wine and one by Amann (2022) on non-alcoholic wine, which is of particular interest here due to the similarity of the new value proposition created by the product (Amann, 2022).

Based on the methodology of the German Wine Institute (2023b), Amann (2022) forms customer segments based on consumption motives for the non-alcoholic product. In order to follow previous research and also to establish comparability with the segments of the German Wine Institute and Amann (2022), consumption motives will therefore form the basis for customer segmentation. The work by Szolnoki et al.(2023) provides the first descriptive results on consumption motives for non-alcoholic sparkling wine. These are:

- Situational abstention (1)
- Taste (2)
- Health aspects (3)
- Abstaining from alcohol (4)
- Other (5)

Amann (2022) selected the consumption motives from a systematic literature review and qualitative sources that preceded the empirical study. Thus, the selection is based on extensive research, in which the results from the publications by Klohr, Fleuchaus & Theuvsen (2014) and Schäufole & Zander (2020) in particular are also considered. Figure 6 compares and contrasts the results of the various consumption motives discussed. In addition, Szolnoki's (2023) motives are assigned to those of Amann's (2022).

Consumption motives by Szolnoki (2023)	Consumption motives by Amann (2022)
<ul style="list-style-type: none"> - Situational abstinence (1) - Taste (2) - Health aspects (3) - Abstaining from alcohol (4) - Other (5) 	<ul style="list-style-type: none"> - Situational abstinence (avoid drunkenness) (1) - Taste (2) - Health (3) - Alcohol aversion (4/5) - Trying out (5) - Beverage innovation (5) - Religion (4/5) - Bad experiences with alcohol (4/5) - Pregnancy (4/5) - Social motives (4/5)

Figure 6: Allocation of consumption motives, own illustration (Szolnoki 2023; Amann 2022).

The segments from Amann (2022) are therefore adopted in order to obtain a higher granularity and quality of the answers.

In addition, the segments can be described with further preferences after allocation. This step has no influence on the formation of the segments. Therefore, the preferences of the superordinate market, conventional sparkling wine, are assumed to be analogous to the research object. Thus, a selection of relevant aspects for the extended description of the segments are considered (Mueller, 2006; Amann 2022).

In summary, the literature research shows that there is no target group segmentation in the existing academic literature on the research subject, but there is for related markets. However, in order to enable precise market cultivation with marketing measures, it is necessary to identify the target groups precisely (Meffert et al., 2019). A more precise description of the target groups of non-alcoholic sparkling wine, based on different segmentation criteria, is therefore still pending in academic research and is the subject of this thesis.

4.1.2.2 Influencing factors on innovation adaptation

A systematic literature review was then conducted on research question 2. The aim of this literature search is to investigate whether there are already academic publications on the factors influencing innovation adoption of non-alcoholic sparkling wine in Germany that can contribute to answering research question 2. The corresponding research question is as follows:

RQ2: What are factors that influence the adoption intention of potential customers for non-alcoholic sparkling wine?

Adoption and diffusion research is basically concerned with the adoption and distribution of innovation in different markets. However, the stage of research in the field of non-alcoholic

sparkling wines is still undeveloped. For example, there are still no empirical studies that deal explicitly with the factors influencing the adoption of non-alcoholic sparkling wines in Germany. However, by looking at the existing literature on research into the sparkling wine market, it is already possible to identify some possible factors that influence adoption.

In line with the types of influencing factors identified in chapter 2.3.2, the factors are considered below depending on their influence on the product or on the consumers. The product-oriented influencing factors are considered first.

The primary product-oriented purchasing criteria for sparkling wines are considered to be **taste**, **price** and **brand** (Mueller, 2006; Szolnoki et. al, 2023). It therefore is reasonable to consider the criteria in the non-alcoholic sparkling wine segment as influencing factors. In the results of Szolnoki's work (2023), sparkling wines are rated as above average. However, there is no indication of how taste affects the adaptation of the innovation. The market structure continues to be characterized by individual strong brands. However, there is no evidence in the literature of an influence of the brands on the adaptation of innovation, particularly by the many small vintners. However, the German Wine Institute explicitly recognizes a trend towards premiumization among non-alcoholic sparkling wines (Büscher, 2023). This suggests an increased willingness to pay higher prices when buying non-alcoholic wines and therefore that the price has an influence on the adaptation of the innovation. Following on from this trend, the following hypothesis will be investigated:

H1: *The willingness to pay for non-alcoholic sparkling wine is higher than the willingness to pay for conventional sparkling wine.*

The consumer-oriented influencing factors are divided into sociographic, psychographic and behavior-based influencing factors (Reinhardt et al., 2019). There may be overlaps with the content of the answer to the first research question, the segmentation. Consumer characteristics can be part of the target group definition as well as influencing factors on innovation adaptation (Bruwer et al., 2014). According to previous research (Szolnoki, 2023), **age** and **gender** can be considered as socio-demographic factors. Based on the descriptive results of Szolnoki (2023), the proportion of women who consume non-alcoholic sparkling wine is higher than the proportion of men. It can therefore be concluded that gender plays a role as an influencing factor in the adaptation of non-alcoholic sparkling wine. Furthermore, in the same study, the relative number of consumers decreases with increasing age. The following hypotheses can therefore be assumed:

H2: *Gender has a significant influence on the intention to adopt non-alcoholic sparkling wine insofar as women have a higher intention to adopt non-alcoholic sparkling wine than men.*

H3: *The age of the consumer has a significant influence on the intention to adopt non-alcoholic sparkling wine insofar as younger people have a higher intention to adopt non-alcoholic sparkling wine than older people.*

A meta-analysis from 1970 clearly shows that psychographic influencing factors explain a considerable proportion of the variance in adoption intention and adoption behavior when explaining innovation adoption (Arts et al., 2011). In the context of adoption research, various **buying motives** are considered as psychographic influencing factors. This means that the reason why someone buys non-alcoholic sparkling wine has an influence on the likelihood of buying it. Buying motives refer to result-oriented inner forces that are to be satisfied through consumption activities (Zaharia, 2019). A clear distinction must be made between purchase motives and consumption motives. The research results to date in the context of non-alcoholic sparkling wine products and wines essentially show the potential purchase motives of **health**, **social motives** and **situational renunciation** (Amann, 2022; Szolnoki, 2023). **Religious motives** are also regularly considered as an influencing factor for non-alcoholic beverages. In particular, reference is made to religions that at least partially prohibit alcohol (Johnson et al., 2020). The following hypothesis can therefore be formulated with regard to purchase motives:

H4: *Buying motives have a significant influence on the intention to adopt non-alcoholic sparkling wines insofar as the intention to innovate is significantly influenced by health, religious and social motives as well as situational abstinence from alcohol.*

4.2 Identification of Research Gaps

To identify research gaps concerning the target group definition for non-alcoholic sparkling wine, the necessary terminologies “Target Group Segmentation” and “Innovation Adoption” were defined. Based on this, the presence of necessary criteria for definition fulfillment was examined and confirmed. Non-alcoholic sparkling wine has proven to be a suitable subject for innovation adoption.

For determining relevant research gaps, a systematic literature review was conducted. This led to the finding that in the highly segmented wine market, the subordinate market of non-alcoholic beverages, especially non-alcoholic sparkling wines, has been given little consideration. According to the current state of the literature, segmentation of the target group

is not possible. However, the literature can suggest indications through the assumption of analogies and provides tools for achieving goals.

In summary, it can be stated that the segmentation of the customer target group for non-alcoholic sparkling wines represents a relevant research gap. The assumed analogies from the literature review to higher-level market segments lead to the specified research questions:

RQ1: *How can the potential target segments, in the age group between 20 and 60, be characterized for alcohol-free sparkling wine, how do they position themselves, and what characteristics do they value?*

RQ2: *What are the factors that influence the adoption intention of potential customers for non-alcoholic sparkling wine?*

Based on the literature review on methodology, hypotheses to be investigated could be developed, which can be taken in detail from chapter 4.1.2.2.

There is an expectation that testing the developed hypotheses, in conjunction with already acquired knowledge from the literature review, can lead to answering the research questions and provide a basis for successful market cultivation.

4.3. Results of the empirical analysis

The aim of this chapter is to close the research gap using the results of the survey. To this end, the data set is described below before the customer segments are formed using a cluster analysis and then the segments are examined with regard to further variables. This is intended to answer the first research question. Furthermore, the potential influencing factors are analyzed with regard to their influence on innovation adaptation in order to answer the second research question.

4.3.1 Data cleansing, quotas and description of the sample

The final data set contains a sample size of $n = 213$, which therefore deviates from the target size for a representative survey. This deviation is a limitation with regard to representativeness and is taken into account in the critical assessment of this work. In the final data set used in the analysis of the survey, only the responses of those participants who answered the two control questions correctly were included. It can therefore be assumed that the questions were answered conscientiously.

As stated in chapter 3.1, the aim of the survey (see structure in Appendix III) was to represent the population in terms of gender and age by means of upstream quotas. To this end, the distribution is compared with the latest version of the Federal Statistical Office (Federal Statistical Office, 2023a; Federal Statistical Office, 2023b). The results are shown in the following Figure 7:

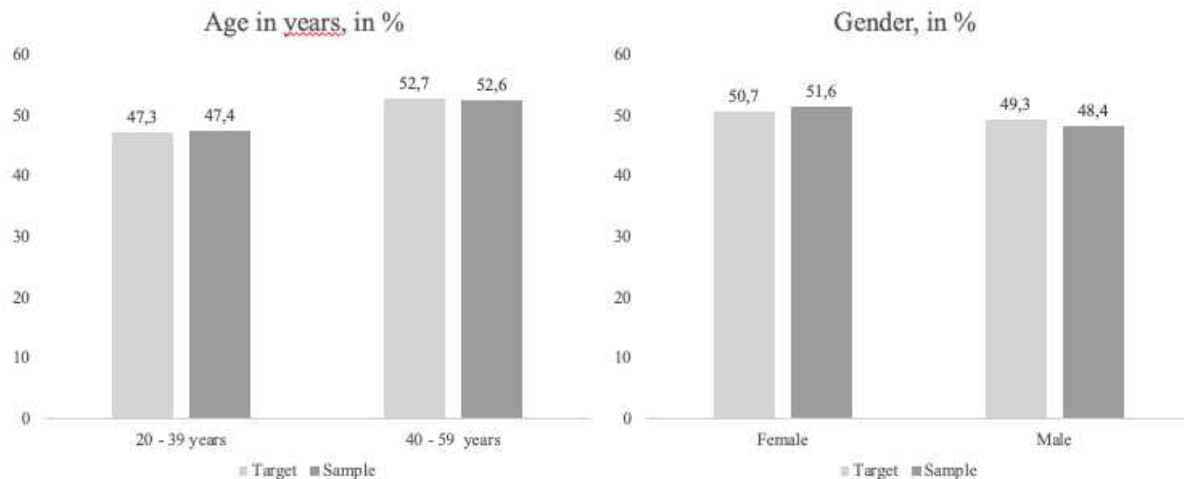


Figure 7: Comparison of target and sample in %, own illustration (Federal Statistical Office 2023a; Federal Statistical Office 2023b; survey data).

47% of respondents are between 20 and 40 years old, and 53% are between 40 and 60 years old. Furthermore, around 52% of respondents are women and 48% are men. The Figures show that the distribution of participants corresponds to the population in terms of quotas. The sample is therefore representative with regard to these characteristics. In addition, the socio-demographic data of the participants' highest school-leaving qualification and place of residence were recorded. This data is only recorded for those who have previously indicated an innovation behavior or an intention to innovate (n=150). The distribution of the sample with regard to the aforementioned characteristics is shown in Figure 8 and Figure 9.

With regard to these two criteria, the socio-demographic characteristics of the sample deviate from the target (Federal Statistical Office, 2020; Federal Statistical Office, 2023c). Residents of the federal states of Saxony and Saarland did not take part in the survey or at least did not state their place of residence ("Prefer not to say"). This deviation from the structural characteristics of the population will be taken into account in the critical reflection of the work, as will the sample size.

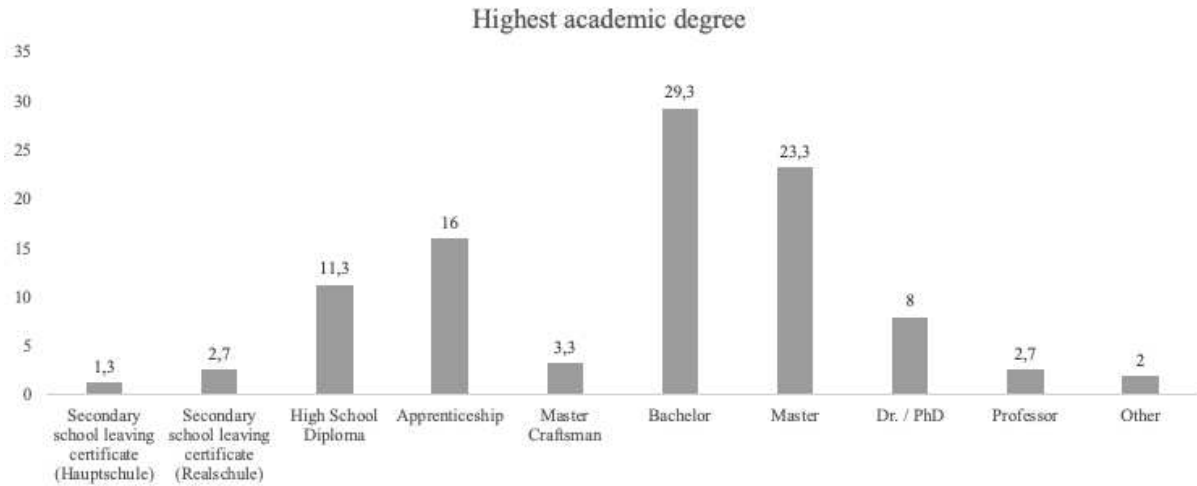


Figure 8: Highest academic degree of the participants, sample in % (survey data).

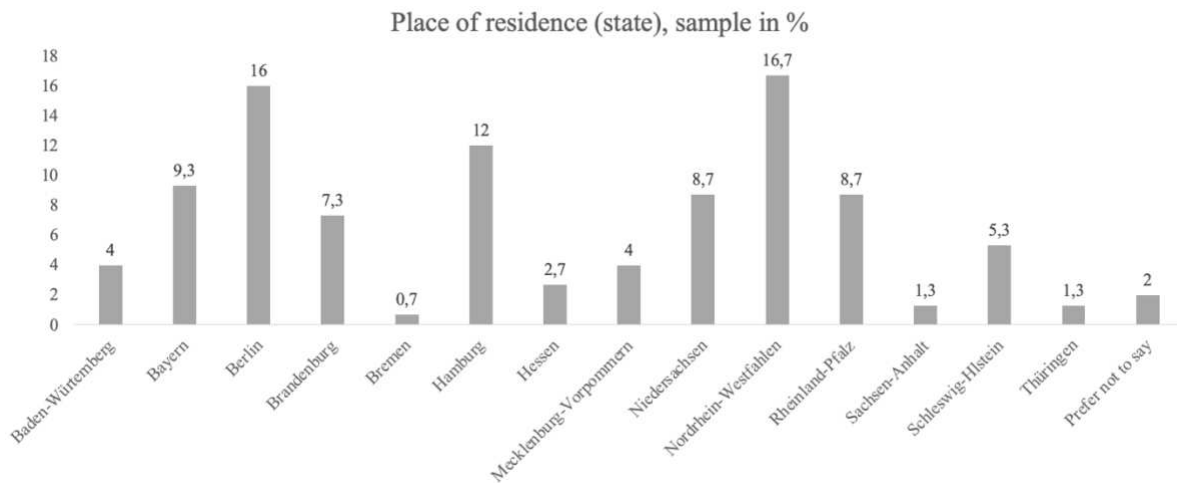


Figure 9: Place of residence (state) of the participants, sample in % (survey data).

4.3.2 Determination of target group clusters

To determine the target group clusters for non-alcoholic sparkling wine, a cluster analysis is applied in this study to the 150 test subjects with a previously identified intention to adapt or already demonstrated adaptation behavior.

As derived in Chapter 4.1.2, the variables for the clustering are the 10 surveyed consumption motives for non-alcoholic sparkling wine. Using a **hierarchical cluster analysis** according to Ward's method and the Squared Euclidean Distance as an interval, a level is created from the dendrogram to create 4 clusters (see Appendix IV). For this purpose, a **K-Means cluster analysis** with 4 clusters is carried out (Dolnicar et al., 2018). The following Figure 10 shows the centers of the clusters:

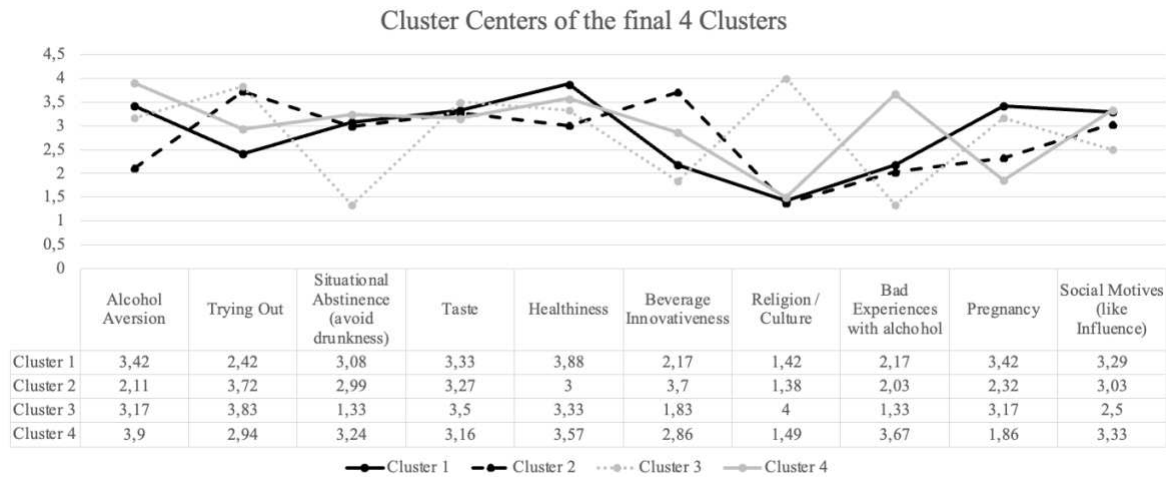


Figure 10: Cluster Centers of the final 4 Clusters, clustered by the consumption motives (survey data).

Consumption Motive	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
Alcohol Aversion	33,106	3	,646	146	51,281	<,001
Trying Out	13,004	3	,643	146	20,230	<,001
Situational Abstinence (avoid drunkenness)	6,575	3	1,063	146	6,185	<,001
Taste	,310	3	,736	146	,422	,738
Healthiness	5,901	3	,739	146	7,980	<,001
Beverage Innovativeness	19,779	3	,609	146	32,463	<,001
Religion / Culture	12,861	3	,403	146	31,928	<,001
Bad Experiences with alcohol	31,191	3	,599	146	52,113	<,001
Pregnancy	14,375	3	,673	146	21,368	<,001
Social Motives (like influence)	1,865	3	,734	146	2,541	,059

Figure 11: ANOVA between the Cluster Centers (survey data).

The subsequent **ANOVA** between the clusters reveals statistical significance for all consumption motives within a 95% confidence interval, except for Taste and Social Motives, like influence (Figure 11). Thus, only the two mentioned motives cannot be used as statistically significant distinguishing features. The number of cases is distributed among the clusters as follows:

- Cluster 1: 24 cases
- Cluster 2: 71 cases
- Cluster 3: 6 cases
- Cluster 4: 49 cases.

Therefore, based on the statistically significant cluster criteria, the clusters can be described for the first time. Notably, Cluster 3 exhibits a low value for “Situational Abstinence” and a high value for “Religion/Culture”, which is contrary to the other three clusters. Upon closer examination, the clusters display the following peculiarities regarding consumption motives:

Cluster 1: Compared to the other clusters, the mean value for the consumption motives "Trying out" and "Beverage Innovativeness" are weak, while the values for "Healthiness" and "Pregnancy" are strong.

Cluster 2: Compared to the other clusters, the mean value for the consumption motives "Alcohol Aversion", "Healthiness" and "Pregnancy" are minor, while the value for "Beverage Innovativeness" is strong.

Cluster 3: Compared to the other clusters, the mean value for the consumption motives "Situational Abstinence", "Beverage Innovation" and "Bad Experience" are low, while the value for "Religion / Culture" is high.

Cluster 4: Compared to the other clusters, the mean value for the consumption motive "Pregnancy" is low, while the values for "Alcohol aversion" and "Bad experience" are prominent.

For the definition of the target customer segments, it is of interest to characterize these clusters more precisely. For this purpose, **cross-tabs** are analyzed in order to examine the dependency of the clusters with the non-metric variables of gender, highest educational qualification and place of residence (federal state). It is remarkable that Cluster 3 (n=6) consists of 83.3% men. However, the **chi-square test** shows no statistical significance for any of the three variables, which means that independence between the variables cannot be rejected.

The following examines the defined clusters for more precise characterization based on further indicated preferences using ANOVA to identify additional differences. This includes age as a metric and the additionally requested preferences as quasi-metric variables. In this context, the **Levene test** for assessing homogeneity of variance reveals a lack of variance homogeneity for age ($p < 0.05$), leading to the implementation of the more robust **Welch test**. Figure 12 shows that significant differences exist between the clusters for each preference, but not for age. Therefore, the ANOVA can be evaluated for the preferences, but not for age. Consequently, Figure 13 presents the mean values of the clusters regarding the additionally captured preferences:

Preferences	Statistic	df1	df2	Sig.
Origin of Producer	6,327	3	22,376	,003
Origin of Base Wine	12,540	3	22,107	<,001
Well-known Brand / Winery	12,032	3	25,770	<,001
Reviews / Ratings	18,658	3	21,177	<,001
Taste	10,090	3	20,650	<,001
Design	3,631	3	20,927	,030
Age	,074	3	22,022	,973

Figure 12: Welch Robust Test of Equality of Means (survey data).

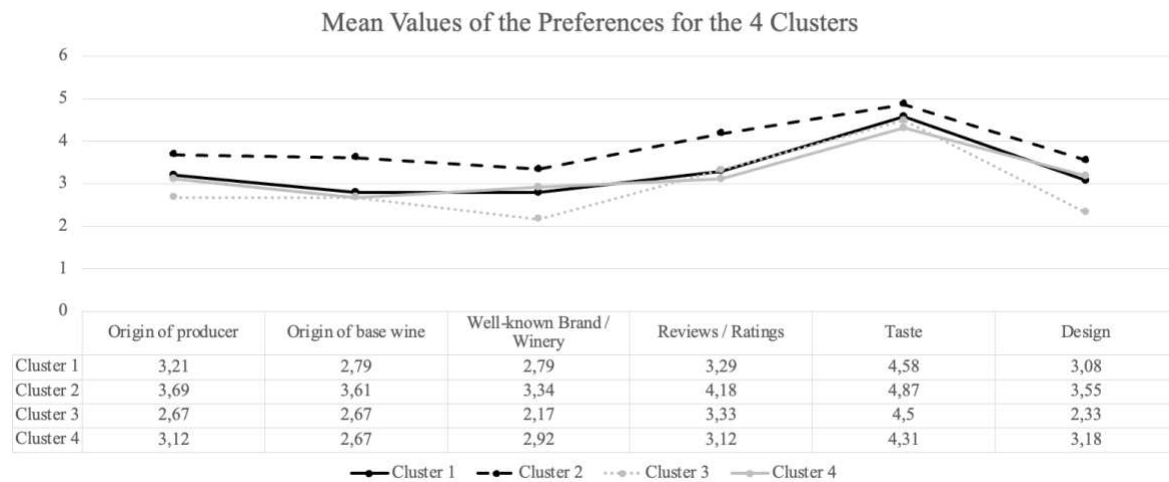


Figure 13: Mean Values of the Preferences for the 4 Clusters (survey data).

When examining the mean values, it is noticeable that preferences across all clusters are relatively similar in proportion, hence the lines indicating preferences follow a similar trajectory. However, Cluster 2 displays higher mean values for all preferences, while the other three clusters have similar mean values. Only Cluster 3 has comparatively lower expression in the preferences for "Well-known brand/winery" and Design. "Taste" is important to all target groups. These preferences allow for a more detailed characteristic description of the target groups:

Cluster 1 "Health-Conscious": With 24 individuals, this is the second smallest cluster, accounting for 16% of the responses. Compared to the other clusters, the consumption motives "Healthiness" and "Pregnancy" are strongly pronounced, indicating a fundamental emphasis on health. However, motives such as "Trying out" and "Beverage Innovativeness" are less pronounced, suggesting a less significant interest in the product. This aligns with a mid-range preference curve.

Cluster 2 "Explorers": Comprising 71 participants, hence 47.3% of the responses, this is the largest segment. Compared to other clusters, consumption motives like "Alcohol Aversion," "Healthiness," and "Pregnancy" are less pronounced, suggesting these are not long-term attitudes characterizing this cluster. Instead, "Beverage Innovativeness" is highly pronounced and quality in every aspect is of significant importance. The interpretation suggests that Explorers have a high interest in the product and proof it closely.

Cluster 3 "Religious Abstainers": The smallest cluster with just 6 individuals, making up 4% of the responses. Consumption motives such as "Situational Abstinence," "Beverage Innovation," and "Bad Experience" are less pronounced. This clarifies that distance from alcohol is not a motive here. In contrast, "Religion/Culture" is strongly pronounced. Additionally, this segment does not place much importance on brand recognition and design, which suggests a pragmatic perspective on the product as an alcohol alternative.

Cluster 4 "Party People/Situational Abstainers": With 49 cases, making up 32.7% of the responses, this is the second-largest segment. The strong expression of motives like "Alcohol Aversion" and "Bad Experience," along with the highest value for "Situational Abstinence", implies that a primary motive is the short-term avoidance of alcohol. Compared to other clusters, the consumption motive "Pregnancy" is less pronounced, leaving room for the interpretation that this cluster is generally more engaged with immediate consequences of alcohol than long-term decisions.

Based on this empirical investigation, four customer segments have been identified that significantly differ in their consumption motives and product-related preferences. These segments are the Health-Conscious, Explorers, Religious Abstainers, and Party People/Situational Abstainers. Thus, academic research now includes a target group segmentation in the non-alcoholic sparkling wine market in Germany, which can serve commercial enterprises as a foundation for better market cultivation. This means that RQ1 could be answered.

4.3.3 Testing the hypotheses of potential influencing factors on innovation adoption

The aim of this chapter is to answer research question RQ2 and to test potential influence factors on innovation adaptation. The influence factors are defined in chapter 4.1.2.2. and their

influence is assessed on the basis of the literature in the form of hypotheses. The hypotheses are summarized as follows:

No.	Hypothese
H1	The willingness to pay for non-alcoholic sparkling wine is higher than the willingness to pay for conventional sparkling wine.
H2	Gender has a significant influence on the intention to adopt non-alcoholic sparkling wine in insofar as women have a higher intention to adopt non-alcoholic sparkling wine than men.
H3	The age of the consumer has a significant influence on the intention to adopt non-alcoholic sparkling wine in so far as younger people have a higher intention to adopt non-alcoholic sparkling wine than older people.
H4	Buying motives have a significant influence on the intention to adopt non-alcoholic sparkling wines insofar as the intention to innovate is significantly influenced by health, religious and social motives as well as situational abstinence from alcohol.

Figure 14: Overview of the hypotheses to be tested (Chapter 4.1.2.).

Thus, in this part, the hypotheses are tested sequentially. The first hypothesis to be tested is:

H1: *The willingness to pay for non-alcoholic sparkling wine is higher than the willingness to pay for conventional sparkling wine.*

Both the willingness to pay for an average alcoholic sparkling wine and the willingness to pay for an average non-alcoholic sparkling wine were measured in the form of a categorical variable. A statistically significant difference in the willingness to pay is therefore tested using the chi-square test. This indicates a statistical significance ($p < 0.05$) of < 0.01 , meaning that there is a difference. The increased willingness to pay for the non-alcoholic product becomes evident in the descriptive statistics.

	Value	df	Asymptotic Significance (2-sided)		N	Mean		Std. Deviation
						Statistic	Std. Error	Statistic
Pearson Chi-Square	342,549 ^a	36	<,001	Willingness to pay for non-alcoholic sparkling wine	150	4,28	,114	1,400
Likelihood Ratio	274,534	36	<,001	Willingness to pay for alcoholic sparkling wine	150	3,81	,121	1,481
Linear-by-Linear Association	102,126	1	<,001					
N of Valid Cases	150							

Figure 15: Chi-square test and descriptive statistics for willingness to pay for H1 (survey data).

Hypothesis H1 can therefore be confirmed.

The second hypothesis to be tested is:

H2: *Gender has a significant influence on the intention to adopt non-alcoholic sparkling wine in insofar as women have a higher intention to adopt non-alcoholic sparkling wine than men.*

To measure this influence, a **linear regression** was carried out, with gender as the independent variable and the influence on the intention to innovate measured as a quasi-metric variable. There is statistical significance ($p < 0.05$) and the coefficient is positive, as visible in Figure 16.

ANOVA					Coefficients			
	Sum of Squares	df	Mean Square	F	Sig.	Unstandardized Coefficients b	Standardized Coefficients Std. Error	Sig.
Regression	17,111	1	17,111	9,944	,002			
Residual	363,086	211	1,721					
Total	380,197	212						
(Constant)						2,520	,287	<,001
Gender						380,197	212	,002

Figure 16: Results of the linear regression for H2 (survey data).

Hypothesis 2 can therefore be confirmed. Gender has a significant influence on innovation adoption in that women are more inclined to adopt the innovation.

The third hypothesis to be tested is:

H3: *The age of the consumer has a significant influence on the intention to adopt non-alcoholic sparkling wine in so far as younger people have a higher intention to adopt non-alcoholic sparkling wine than older people.*

Here, the influence of the metric variable age is measured as an influence variable on innovation adoption. The result is statistically significant ($p < 0.05$) and the coefficient is negative (Figure 17).

ANOVA					Coefficients			
	Sum of Squares	df	Mean Square	F	Sig.	Unstandardized Coefficients b	Standardized Coefficients Std. Error	Sig.
Regression	16,386	1	16,386	9,503	,002			
Residual	363,811	211	1,724					
Total	380,197	212						
(Constant)						4,379	,336	<,001
Age, in years						-,024	,008	,002

Figure 17: Results of the linear regression for H3 (survey data).

Age therefore has a significant influence on innovation adoption in that young people are more inclined to adopt the innovation. Hypothesis 3 can be confirmed.

The fourth hypothesis to be tested is:

H4: *Buying motives have a significant influence on the intention to adopt non-alcoholic sparkling wines insofar as the intention to innovate is significantly influenced by health, religious and social motives as well as situational abstinence from alcohol.*

A **multiple linear regression** is carried out to measure the influence of several variables. The result shows that only the p-value of the coefficients of the religion / culture variable is statistically significant ($p < 0.05$) on the intention to adopt the innovation, as shown in Figure 18:

ANOVA						Coefficients			
	Sum of Squares	df	Mean Square	F	Sig.	Unstandardized Coefficients b	Standardized Coefficients Std. Error	Sig.	
Regression	3,232	4	,808	2,773	,029	(Constant) 4,730	,289	<,001	
Residual	42,261	145	,291			Healthiness -,078	,049	,113	
Total	45,493	149				Religion/ Culture -,153	,057	,008	
						Social Motives ,037	,052	,477	
						Situational abstinence -,059	,042	,157	

Figure 18: Results of the linear regression for H4 (survey data).

This shows that only religion / culture has a negative influence on innovation adaptation. Hypothesis 4 can therefore not be confirmed.

To summarize, it was confirmed that in the sparkling wine market there is a higher willingness to pay for the non-alcoholic variant than for the alcoholic variant. It was also found that the factors of age and gender have an influence on innovation adoption: Women and younger people are more inclined to try non-alcoholic sparkling wine. It also became significantly clear that religion has no influence on the intention to innovate.

5. Conclusion

The aim of this thesis was to form customer segments for the market for non-alcoholic sparkling wine in Germany and to find out whether there are factors that significantly influence the intention to consume non-alcoholic sparkling wine. This chapter summarizes the results of this work in the context of existing research.

To date, there has been no empirical, differentiated analysis of customers in the market for non-alcoholic sparkling wines in Germany. As a result, there does not exist a target group segmentation for the research subject in the existing academic literature. Furthermore, the sparkling wine market as a whole has regularly been considered in an undifferentiated way, as a sub-market of the overall wine market. However, there are isolated studies on the customers

of other innovative wine products that could be applied analogously in this thesis. Thus, based on initial descriptive approaches to the current state of research and research on related innovative products, customer segments could be identified in this thesis based on their consumption motives:

1. Cluster "Health-Conscious" (16%), with the main motives "Health" and "Pregnancy"
2. Cluster "Explorers" (47.3%), with the main motive "Beverage Innovativeness" and high expectations of the product
3. Cluster "Religious Abstainers" (4%), with the main motive "Religion/Culture"
4. Cluster "Party People/Situational Abstainers" (33%), with the main motives "Alcohol Aversion", "Bad Experience" and "Situational Abstinence".

Thus, a detailed examination of the customer landscape in the market for non-alcoholic sparkling wines in Germany could be added to science.

Furthermore, research on innovation adaptation has not yet provided any factors influencing the adaptation of non-alcoholic sparkling wine. Considering the categories of influencing factors as well as the current academic literature, potential influencing factors on innovation adaptation could be identified and tested. The following influencing factors were thus confirmed:

1. Gender, in the sense that women are more likely to adapt the innovation
2. Age, in the sense that younger people are more likely to adapt the innovation

In addition, it was possible to show that the willingness to pay of those who demonstrate an intention to adopt this innovation is significantly higher for the non-alcoholic variant than for the alcoholic variant.

To conclude, the research gap that emerged from the theoretical analysis revealed an outstanding target group analysis and absence of identified influencing factors to adopt the innovation of non-alcoholic sparkling wine. The primary research of this thesis has produced results that expand academic knowledge in these areas and thus contribute to closing the research gap. In addition, relevant insights have been gained for potential market development in order to be able to carry out marketing measures in a more targeted manner and to address customers in a targeted manner in the market for non-alcoholic sparkling wine in Germany.

6. Limitations

In scientific research, it is essential to consider the limitations of a study, as they have a significant impact on the interpretation and generalizability of the results. This chapter is dedicated to the limitations of the online survey conducted in the context of target group segmentation for non-alcoholic sparkling wine. The critical examination of the limitations of the methodological approach and the data set not only serves the transparent communication of the research quality, but also offers starting points for future studies.

A fundamental limitation of the study results from the nature of the online survey itself. The traceability of responses is limited, as it is not possible to check directly or ask questions in case of ambiguity. This can lead to misunderstandings or the selection of answer options that do not reflect the actual views of the participants. In addition, technical factors such as the user-friendliness of the survey tool or the internet connection could affect the quality of the data.

The sample size of $n = 213$ deviates from the target size, which limits the representativeness and statistical power of the study. This affects the ability to detect small effects and draw reliable conclusions about the population. The uncertainty resulting from a small sample size must be taken into account when interpreting the data.

There is a further limitation with regard to socio-demographic characteristics. The distribution of academic qualifications within the sample does not reflect the actual distribution in the population as a whole. This could indicate a bias, as people with higher levels of education may be more likely to participate in online surveys or have a greater interest in the topic. This cannot be determined from the data.

The distribution of participants by place of residence is similar. The fact that the federal states of Saxony and Saarland were not included in the sample prevents a full representation of the structural characteristics of the German population. This reduces the validity of the study with regard to regional differences in consumer behavior.

In addition, limitations in the availability and quality of data from secondary sources may have influenced the basis for hypothesis formation and the theoretical classification of the results. Especially in the context of such a specific research area as the market for non-alcoholic sparkling wine, existing sources may not be sufficiently in-depth or up-to-date. It was not possible to verify the results of the studies mentioned.

Another critical point that was not addressed in the survey concerns the reasons for not consuming non-alcoholic sparkling wine. Findings on barriers to consumption could provide insightful points of contrast to deepen understanding of the decision-making processes of potential customers.

Finally, this chapter reflects on the importance of being aware of the limitations of one's research. Only by understanding the limitations of our findings can we ensure and improve the quality and relevance of future studies.

7. Future Research

This study has provided valuable insights into the segmentation of the market for non-alcoholic sparkling wine. However, the limitations identified also open up promising perspectives for future research. The following section outlines possible research areas and questions that aim to close the existing gaps and further deepen the understanding of consumption motives and preferences.

An immediate extension of this work could be to increase the sample size in order to create a more representative data base. Future studies should aim to provide a comprehensive picture of the population through even regional distribution and adequate representation of all educational levels. This could be achieved through the use of mixed survey methods, including both online and offline components, in order to reach a broader section of the population.

It would also be interesting to explore the reasons that prevent potential consumers from consuming non-alcoholic sparkling wine. A qualitative research approach, based on in-depth interviews or focus groups, could provide a more nuanced insight into the reasons for rejection and the underlying attitudes. Cultural and social norms as well as psychological barriers influencing the consumption of non-alcoholic beverages could also be examined in more detail.

The role of marketing and advertising in shaping preferences for non-alcoholic sparkling wine is another important area of research. Future studies could examine how different marketing strategies influence the perception and purchase behavior of the various identified segments. This would enable companies to target their communications more effectively.

Finally, future work should broaden the range of variables considered. In particular, the behavior and preferences of the younger age groups under 20 and over 60 deserve further attention in order to broaden the knowledge of the full range of potential consumers. In addition,

the inclusion of international data could help to make intercultural comparisons and identify global trends in the consumption of non-alcoholic alternatives.

The above suggestions for future research highlight the great potential that lies in a deeper understanding of the market for non-alcoholic sparkling wine. A continuous and methodologically diverse engagement with this area of research will enable the derivation of targeted strategies for market entry and development.

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Appendix

Appendix I: Definitions of Innovations

Source	Definition of Innovation
Schumpeter (1912)	Innovations are the carrying out of new combinations.
Rogers (2003)	An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is 'objectively' new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation.
Baregheh et al. (2009)	Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their market- place.
Ottosson (2019)	Innovations are new products and/or services that have been "sold" and taken into use in at least one local market.

Own illustration, Amann (2022).

Appendix II: Phases of the Innovation Process

Source	Phases					
	1	2	3	4	5	6
Applied, summarizing model	Problem/need identification	Idea and Selection	Research, development and production	Market launch and market processing	Innovation adoption and diffusion	Result
Horeth (2021)	Problem identification	Idea generation	Project planning, research, development, production	Market launch	Adoption, diffusion	Competitive imitation
Ottosson (2019)		Idea generation	Development, commercialization	Market launch		
Granig (2007)	Task identification	Idea generation, Idea evaluation	Project realization	Introduction phase		Ongoing utilization
Gerpott (2005)		Idea generation, concretization	Concretization, commercialization	Commercialization		
Rogers 2003	Problem/need identification		Research, development, commercialization	Commercialization	Adoption, diffusion	Results

Own illustration, Amann (2022).

Appendix III: Survey

Dear participant,

thank you for participating in this survey.

This research is conducted in the scope of The **Master Thesis** of **Felix von Wietersheim**, a student of the **Católica Lisbon School of Business & Economics**.

The objective of this survey is to extend the academic knowledge in the market of non-alcoholic sparkling wines in Germany. In detail, the aim ist to form target segments and identify factors that influence the decision to adopt this innovation.

The information provided will be collected anonymously and processed solely for the purposes of this study. If you agree to complete the survey, please click the button on the bottom right to begin. The survey will take approximately **3-5 minutes** to be completed.

Thank you for your collaboration.

What is your gender?

- Male
- Female
- Other

What is your age in years?



Have you drunk non-alcoholic sparkling wine in the last 12 months?

- Yes
- No
- I am not sure

Do you intend to drink non-alcoholic sparkling wine in the next 12 months?

- Definitely yes
 Probably yes
 Might or might not
 Probably not
 Definitely not

What is the price you would pay for an average bottle of non-alcoholic sparkling wine?

- 0-4 EUR
- 5-9 EUR
- 10-14 EUR
- 15-20 EUR
- 25-29 EUR
- 30-34 EUR
- 35 EUR or more

What is the price you would pay for an average bottle of alcoholic sparkling wine?

- 0-4 EUR
- 5-9 EUR
- 10-14 EUR
- 15-20 EUR
- 25-29 EUR
- 30-34 EUR
- 35 EUR or more

Why do you drink non-alcoholic sparkling wine or would you drink non-alcoholic wine? Please indicate to what extent the following reasons apply to you

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Alcohol aversion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trying out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Situational abstinence (avoid drunkenness)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please choose "Strongly agree"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Healthiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beverage innovativeness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Religion/culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bad experiences with alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pregnancy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social motives (like influence)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How important are the following criteria to you when buying non-alcoholic wine?

	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Origin of Producer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Country-of-Origin of base wine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Well-known brand/winery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews / Ratings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please choose the medium option	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is your highest academic degree?

- Secondary school leaving certificate (Hauptschule)
- Secondary school leaving certificate (Realschule)
- High school diploma (Abitur)
- Apprenticeship
- Master craftsman
- Bachelor
- Master / Diploma
- Dr. /PhD
- Professor
- Other

In which state (Bundesland) do you live?

- Baden-Württemberg
- Bayern
- Berlin
- Brandenburg
- Bremen
- Hamburg
- Hessen
- Mecklenburg-Vorpommern
- Niedersachsen
- Nordrhein-Westfalen
- Saarland
- Sachsen
- Sachsen-Anhalt
- Schleswig-Holstein
- Thüringen
- Prefer not to say

Appendix IV: Hierarchical Cluster Analysis: Dendogram

