



Recreational Cannabis in Germany: A Study of an Emerging Market

Raphael Berger

152121116

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Abstract

Title: Recreational Cannabis in Germany: A Study of an Emerging Market

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Author: Raphael Berger

Cannabis is one of the oldest crops known to mankind, with evidence of its use dating back to ancient China and India. Globally, cannabis legalization is becoming more prevalent, with countries like Uruguay, Canada, and several states in the United States decriminalizing medicinal and recreational use in recent years. Germany is expected to become one of the largest recreational cannabis markets in the world. Despite the potential size and growth of the German cannabis market, there are still many challenges and uncertainties facing firms looking to enter the market. The research question of this thesis is as follows: what factors will determine success for a cannabis firm when the new regulatory framework is implemented? The research is conducted using a mixed-method approach, using a survey with a sample of $n = 204$ and three expert interviews with market insiders. Amongst others, the research shows that the legalization of cannabis opens opportunities, particularly in the medical field. Quality is paramount for consumers when purchasing cannabis. Branding is predicted to drive the cannabis market, with consumers making choices based on brand perception. Familiarity with brands can influence purchasing decisions, with many perceiving familiar brands as high quality.

Resumo

Título: Cannabis Recreativa na Alemanha: Um Estudo de um Mercado Emergente

Palavras-chave: Cannabis recreativa, Alemanha, legalização

Autor: Raphael Berger

O cannabis é uma das culturas mais antigas conhecidas pela humanidade, com evidências de seu uso remontando à antiga China e Índia. Globalmente, a legalização do cannabis está se tornando mais prevalente, com países como Uruguai, Canadá e vários estados nos Estados Unidos descriminalizando o uso medicinal e recreativo nos últimos anos. Espera-se que a Alemanha se torne um dos maiores mercados de cannabis recreativa do mundo. Apesar do tamanho potencial e do crescimento do mercado de cannabis alemão, ainda existem muitos desafios e incertezas enfrentados pelas empresas que buscam entrar no mercado. A pergunta de pesquisa desta tese é a seguinte: quais fatores determinarão o sucesso de uma empresa de cannabis quando o novo quadro regulatório for

implementado? A pesquisa é conduzida usando uma abordagem de método misto, utilizando uma pesquisa com uma amostra de $n = 204$ e três entrevistas com especialistas do mercado. Entre outros, a pesquisa mostra que a legalização do cannabis abre oportunidades, particularmente no campo médico. A qualidade é primordial para os consumidores ao comprar cannabis. Prevê-se que o branding conduza o mercado de cannabis, com os consumidores fazendo escolhas baseadas na percepção da marca. A familiaridade com as marcas pode influenciar decisões de compra, com muitos percebendo marcas familiares como de alta qualidade.

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List of Abbreviation

API	Active Pharmaceutical Ingredients
BfArm	Federal Institute for Drugs and Medical Devices
CSC	Cannabis Social Club
IPO	Initial Public Offering
IRCCA	Institute for the Regulation and Control of Cannabis
SAM	Serviceable Addressable Market
SOM	Share of Market
TAM	Total Addressable Market
THC	Tetrahydrocannabinol

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1 Introduction

1.1 Problem

Cannabis is one of the oldest crops known to mankind, with evidence of its use dating back to ancient China and India (Zuardi, 2006). Nonetheless, cannabis was criminalized in many parts of the world for much of the 20th century, despite its long history of medicinal and recreational use, over concerns about its psychoactive effects and harm to public health (Svrakic et al., 2012; United Nations, 1961). Despite its criminalization in many regions during the 20th century, cannabis has remained the illicit drug of choice for many young individuals in high-income countries for over two decades, and its popularity has been surging globally (Hall & Degenhardt, 2009). However, in recent years, there has been a growing trend towards legalizing cannabis, particularly for recreational purposes.

Globally, cannabis legalization is becoming more prevalent, with countries like Uruguay, Canada, and several states in the United States decriminalizing medicinal and recreational use in recent years (Boyd & Sevigny, 2021). Germany is another country that has recently legalized cannabis for medical use, albeit with some restrictions. In 2017, the German government passed a law allowing the use of cannabis for medical purposes and later expanded this to allow for the cultivation of cannabis for medical use (Federal Ministry of Health, 2017). The newly elected German government of 2021 adopted this legislation as part of its coalition agreement. A cabinet bill regarding recreational cannabis legalization was published by the German government in 2022 (Federal Ministry of Health, 2022).

Germany is expected to become one of the largest recreational cannabis markets in the world, with a potential market size of over €15 billion by 2025, given the estimated size of the illicit market (Statista, 2023). By 2028, it is estimated that the German cannabis market could reach approximately €16.2 billion, including the medical market (Prohibition Partners, 2019). Investors have shown significant interest in the cannabis space, with several initial public offerings (IPOs) in recent years. In 2019, the German cannabis company SynBiotic went public on the Boerse Duesseldorf¹. In the same year, the public-listed Canadian cannabis company Canopy Growth was acquired for €3.4

¹ Duesseldorf Stock Exchange

billion by Constellation Brands²² (Pitchbook, 2023). North American firms, such as Aurora Cannabis and Aphria, have also entered the German market through acquisitions of local firms. Aurora acquired Pedanios in 2017, the former market leader in medical cannabis, and Aphria acquired CC Pharma (Reuters, 2017; Pitchbook, 2023). Until now, the German cannabis company Sanity Group has raised over €100 million in venture funding from multiple business angels, venture capital firms, and strategic investors, such as British American Tobacco (Pitchbook, 2023). Additionally, several German companies in the cannabis space have gone public, including Cantourage, which went public in November 2022 with a market capitalization of €200 million (Pitchbook, 2023).

1.2 Research Goal and Structure

Despite the potential size and growth of the German cannabis market, there are still many challenges and uncertainties facing firms looking to enter the market. These include navigating the complex regulatory environment, dealing with supply chain issues, and competing with established players in the market. The research question of this thesis is as follows: what factors will determine success for a cannabis firm when the new regulatory framework is implemented? Building on the potential described in the problem chapter, this thesis aims to provide a comprehensive analysis of the factors and strategies essential for the success of firms in the growing German recreational cannabis market. The thesis will examine the historical context of cannabis usage and criminalization, recent trends toward legalization, and the specific regulatory environment in Germany. Furthermore, it will explore market trends, investor interest and the application of pertinent management theories. As management theories TAM (Total Addressable Market), SAM (Serviceable Available Market), SOM (Serviceable Obtainable Market), and willingness-to-pay were applied to provide a comprehensive analysis of the market landscape and consumer behaviour. These concepts can enable firms to successfully navigate this intricate market and attain a competitive advantage.

This paper interrogates the following RQ:

What are the drivers of the recreational cannabis market in Germany and what strategies firms can use to gain a competitive advantage?

² Largest provider of alcoholic beverages across the beer, wine and spirits categories in the United States (Pitchbook, 2023)

We will begin by providing a brief overview of the history of cannabis use and criminalization, as well as the trend toward legalization. We will then discuss the legalization of cannabis in Germany and the current regulatory framework. The next chapter will look at potential precedents in other legislations. The paper will then move on to explore the potential size and growth of the German cannabis market, as well as market trends and investor interest. Finally, the focus moves to identify strategic moves that firms can use to gain an edge. The thesis will close with a discussion of the results and a conclusion.

1.3 Method

To provide insights for firms wishing to thrive in this rapidly evolving industry, this thesis synthesizes existing literature and critically assesses opportunities and challenges inherent in the German cannabis market.

The thesis employs a mixed-methods approach, integrating qualitative and quantitative secondary data from diverse sources:

1. **Academic Journals:** Peer-reviewed articles provide the foundational analysis, focusing on cannabis policy, market dynamics, and consumer behaviour, particularly in the German context.
2. **Market Reports and Industry Analyses:** Insights from market research firms offer quantitative data on market size, consumer demographics, and economic projections.
3. **Government and Legal Publications:** Documents and regulatory guidelines help to understand the legal evolution and current framework of cannabis in Germany.
4. **News Articles and Current Affairs Publications:** Recent developments and public opinion are analysed through leading news sources, capturing the dynamic nature of the cannabis market in Germany.

This approach ensures a comprehensive understanding, balancing historical insights with contemporary market and legal dynamics. The following chapter takes a closer look at the status quo.

2 Situation and Status Quo

The following chapter takes a closer look at the historical, legal, and economic situation that is the foundation for a market entry.

2.1 History of Cannabis Criminalization

Cannabis use and criminalization history is a complex and multifaceted subject influenced by a range of factors. These factors include cultural attitudes, public health concerns, and international drug policy frameworks. By understanding the historical context of cannabis criminalization and the factors that have shaped cannabis policies in Germany, we can

gain valuable insights into the current regulatory environment and the potential future direction of the German recreational cannabis market.

Zuardi's (2006) writes about the traditional practices of ancient China and India that included therapeutic, recreational and religious use of cannabis. This displays how immensely varied cannabis consumption patterns can be depending on cultural background. Cannabis enjoyed this extensive legacy until global authorities criminalized it extensively throughout the 20th century. As a result of potential mental health complications associated with its offshoots and potential health risks, its use was severely restricted.

Hall & Degenhardt (2009) further explore the relationship between cannabis use, mental health, and public policy, arguing that the criminalization of cannabis was driven in part by misconceptions and stigma surrounding its psychoactive effects and associated health risks. The authors examine the evidence on the harms and benefits of cannabis use, noting that while some studies have identified potential risks such as cognitive impairment, respiratory issues, and mental health problems, other studies have highlighted potential benefits such as pain relief, reduced nausea, and neuroprotective effects.

Focusing on the history of cannabis criminalization in Germany, it is essential to understand the broader historical and political context in which these policies were developed. Germany's approach to drug policy has been influenced by various factors, including international drug policy frameworks. The international regulation of cannabis began with the 1925 International Opium Convention, which placed cannabis under control alongside opium and coca. The 1961 Single Convention on Narcotic Drugs further solidified the criminalization of cannabis by classifying it as a Schedule I substance, indicating a high potential for abuse and no accepted medical use (United Nations, 1961).

These international agreements shaped Germany's approach to drug policy, requiring the country to adopt strict controls on the production, distribution, and use of cannabis and other narcotic drugs. Consequently, during the 20th century, cannabis was classified as an illegal narcotic in Germany, with possession, cultivation, and distribution of the substance subject to criminal penalties. This approach was mainly in line with the broader international trend toward cannabis criminalization and was influenced by concerns over the psychoactive effects and potential health risks associated with its use.

However, recent years have seen a shift in attitudes and policies toward cannabis in Germany, reflecting the global trend towards legalization. In 2017, the German government passed a law allowing the use of cannabis for medical purposes under certain conditions (Federal Ministry of Health, 2020). The newly elected German government of 2021 adopted this legislation as part of its coalition agreement, and a cabinet bill regarding recreational cannabis legalization was published by the German government in 2022. The German government released the final regulatory framework on the 24th of April, which will be explored in the following section. (Federal Ministry of Health, 2022)

In conclusion, the history of cannabis use and criminalization is a complex and multifaceted subject that has been influenced by a range of factors, including cultural attitudes, public health concerns, and international drug policy frameworks. By understanding the historical context of cannabis criminalization and the factors that have shaped the development of cannabis policies in Germany, we can gain valuable insights into the current regulatory environment and the potential future direction of the German recreational cannabis market. Following the brief historical overview, the next chapter will describe the legalization process of cannabis in Germany.

2.2 Legalization of Cannabis in Germany

The recent trend towards cannabis legalization, both globally and in Germany, has brought significant changes to the legal and regulatory landscape surrounding the substance. This chapter will explore the process of cannabis legalization in Germany, the current regulatory framework governing its use, the licensing processes for medical and recreational cannabis and the implications of these changes for the emerging recreational cannabis market. Cannabis legalization represents a reorientation of drug policy in Germany. Until now, Germany has followed the line of the UN, which globally prescribes a repressive drug policy. Recently, the ideas of states regarding the continuation of drug policy seem to diverge widely. The legalization of cannabis consumption represents an innovation in drug policy that is internationally controversial (Beck & Prinz, 2024). The following chapters will outline the cases of medical and recreational cannabis that can be viewed as consecutive steps.

2.2.1 Medical Cannabis

In Germany, the path towards cannabis legalization began with the recognition of its potential medical benefits. In 2017, the German government passed a law allowing the use of cannabis for medical purposes under certain conditions (Bundesgesundheitsministerium, 2017). This marked a significant shift in policy, as it acknowledged the therapeutic value of cannabis and opened the door for its legal use in a controlled medical context.

Licensing for medical cannabis in Germany is managed by the Federal Institute for Drugs and Medical Devices (BfArM), which oversees the cultivation, distribution, and prescription of medical cannabis products (BfArM, 2021). To obtain a license for cultivating and distributing medical cannabis, companies must submit an application to BfArM, demonstrating compliance with strict quality control standards, security measures, and other regulatory requirements (BfArM, 2021). BfArM has granted licenses to several companies, including Aurora Cannabis, Aphria and Demecan, to cultivate and distribute medical cannabis within Germany (DW, 2019).

The newly elected German government of 2021 continued to build upon the previous administration's efforts, adopting the medical cannabis legislation as part of its coalition agreement. Subsequently, the government published a cabinet bill in 2022, which proposed the legalization of recreational cannabis (Bundesgesundheitsministerium, 2022). This move signalled the country's intention to further liberalize its cannabis policies and create a regulated market for recreational use.

2.2.2 Recreational Cannabis

The proposed bill for recreational cannabis legalization outlines vital aspects of the regulatory system, such as the establishment of a new federal agency responsible for overseeing the cultivation, distribution, and sale of recreational cannabis. Additionally, the bill proposes strict quality control measures, restrictions on advertising and marketing, and age limits for purchasing and consuming cannabis products (Bundesgesundheitsministerium, 2022).

In October 2022, the German Federal Ministry of Health released a cabinet submission cornerstone paper outlining the key principles for the dispensing of cannabis (Bundesgesundheitsministerium, 2022). This paper provides further guidance on the proposed regulatory framework for recreational cannabis, addressing various aspects such as cultivation, distribution, and sale. The key aspects of the proposed framework include

the creation of a new federal agency to oversee the cultivation, manufacturing, and distribution of recreational cannabis, a licensing system where companies would be required to obtain licenses to cultivate, process, and sell recreational cannabis, with a focus on ensuring the safety and quality of products and recreational cannabis would be sold through specialized cannabis dispensaries, which would be subject to strict regulations, including age verification and product labelling requirements.

Furthermore, a cannabis-specific tax would be implemented, with revenues used to fund drug prevention and treatment programs, as well as research on the effects of cannabis use. Individuals would be allowed to grow a limited number of cannabis plants for personal use, subject to specific regulations. Additionally, for the purpose of drug prevention and education, the government would invest in drug prevention and education programs, aiming to inform the public about the potential risks associated with cannabis use (Bundesgesundheitsministerium, 2022). It basically outlines a two-pillar model. The first pillar, the CanG, which is described further down, serves to authorize private consumption with private cultivation in the form of cultivation associations. The second pillar is intended to establish a framework for the state-controlled production, distribution, and sale of marijuana in speciality stores and is planned for a review by the European Commission by the end of this year (Beck & Prinz, 2024).

While cannabis faced criminalization throughout much of the 20th century in numerous regions globally, Germany is taking a pivotal step in reshaping its stance on the plant. On August 16th, the German cabinet approved a draft law termed the "Act on the Controlled Handling of Cannabis and the Amendment of Other Provisions" (CanG). The law passed the lower chamber (Bundestag) on the 23rd of February 2024 and the upper chamber (Bundesrat) on the 22nd of March 2024. The law has been in effect since 1st April 2024 (Bundesgesundheitsministerium, 2024).

The key point of CanG is that adults can grow up to three cannabis plants for personal use. Additionally, there is an allowance for communal, non-commercial cultivation through designated growing associations or cooperatives. The possession of cannabis is decriminalized, as holding up to 25 grams of cannabis will no longer be subject to legal penalties. A comprehensive ban on advertising and sponsorships for cannabis products and growing associations is to be implemented. Furthermore, cannabis consumption is prohibited within a 200-meter radius around institutions like schools, youth facilities, and several other specified locations. There is the implementation of so-called growing

associations where such groups can operate under strict conditions and require official authorization with a limit of 500 members. Besides the regulations on possessions and cultivation, the law mandates enhanced preventive measures spearheaded by the Federal Centre for Health Education, along with initiatives within the growing associations. The impact and implications of the law will be assessed four years post-implementation. The use of medical cannabis is not part of CanG, as medicinal cannabis will be governed by a separate set of rules, retaining its prescription-only status.

The German government cites several reasons for legalization. Since cannabis has already reached broad segments of society despite the ban, legalization can also be seen as a capitulation to reality. By doing so, lawmakers are following social realities that are otherwise no longer controllable. Another motive cited is health protection, as the consumption of illegally acquired cannabis poses increased health risks due to contamination with potentially toxic substances. Additionally, the THC content is usually unknown and cannot be estimated by the consumer (Beck & Prinz, 2024).

The law aims to control the quality of cannabis and prevent the distribution of contaminated substances. Incentives for increased cannabis consumption are not to be created. Therefore, awareness and prevention work related to cannabis should be intensified. Another goal is to curb organized drug crime through the legal cultivation of cannabis. Regarding health policy, the goal involves quality control to avoid harmful consumption of impure cannabis. Additionally, the supply of cannabis should be decoupled from the supply of hard drugs. In the field of youth protection, the law aims to reduce cannabis consumption among young people. In fiscal policy, the aims of the law are cost savings through relieving police and the judiciary, as well as potential tax revenues that could be generated in the case of legal trade in cannabis (Beck & Prinz, 2024). Following the historical and legal situation, the next chapters will focus on the economic situation regarding the potential market size for recreational cannabis use as well as the medical cannabis market.

2.3 Market of Medical Cannabis Use

The medical cannabis market encompasses products derived from the cannabis plant specifically for medical purposes. These products can include dried flowers, oils, tinctures, capsules, and topical products. Depending on the regulations in each country or state, these products are available through medical dispensaries, pharmacies, and/or online

platforms. They can be consumed in various ways, such as smoking, vaporizing, ingestion, or topical application. The medical cannabis market includes cannabinoid-based medications that do not have market approval. These unapproved medications are provided through healthcare systems, prescribed by doctors, or used as active pharmaceutical ingredients (API). The API is manipulated and/or compounded by a magistral pharmacy to prepare a cannabinoid-based medication without market approval. The medical cannabis market encompasses various forms of cannabis, such as flowers, oils, capsules, and topical products (Statista, 2024).

The medical cannabis market in Germany is experiencing substantial growth, driven by recent legislative changes and increasing acceptance of cannabis for medical use. In 2024, the German medical cannabis market is projected to reach \$499.8 million, with an annual growth rate of 3.54% expected from 2024 to 2029 (Euromonitor, 2024). Germany's medical cannabis market is currently valued at approximately \$3 billion, with projections indicating significant growth potential. The market is expected to expand its patient base tenfold, similar to trends observed in Canada and the USA. This growth is supported by increased accessibility, better patient education, and improved distribution channels, such as Tilray's extensive network of pharmacies and wholesalers across Germany (Euromonitor, 2024). This growth is largely fuelled by the removal of cannabis from the Narcotics Act, which simplifies the process for doctors to prescribe medical cannabis and expands patient access (Euromonitor, 2024).

The German Medical Cannabis Act, effective April 2024, is a significant driver of market expansion. This Act de-schedules cannabis from the list of prohibited substances, making it easier for doctors to prescribe and increasing the likelihood of broader health insurance coverage. The Act also replaces the tender process for cannabis cultivation with a licensing scheme, encouraging more domestic production and potentially reducing reliance on imports (CBE, 2023). The regulatory changes present numerous opportunities for both domestic and international companies. The shift to a licensing scheme for cultivation allows companies to scale up production significantly. Additionally, the new legal framework is expected to attract a wide range of ancillary businesses, including those involved in home-grow equipment, lighting systems, and seeds, although home cultivation is anticipated to be a niche market primarily for enthusiasts (CBE, 2023).

The German medical cannabis market is poised to become one of the largest in the world. Industry experts anticipate that the positive regulatory environment in Germany could

influence other European countries, potentially leading to broader legalization and market growth across the continent. However, full-scale commercialization and the integration of cannabis into mainstream medical practice will depend on continued legislative support and international regulatory adjustments (Euromonitor, 2024). Following the market view for medical cannabis, the next chapter describes the potential market size for recreational cannabis.

2.4 Potential Market Size of Recreational Cannabis Use in Germany

As Germany progressed towards the establishment of a regulatory framework for recreational cannabis, it is crucial to assess the potential size and growth of the market. The demand for drugs in general, and cannabis in particular, depends on factors such as individual preferences, income, the price per unit quantity (e.g., 1 gram), quality (purity and potency), and the prices of substitute goods. Furthermore, market structure also influences the price and quality of a drug. Particularly with illegal drugs, there is likely less competition in the market compared to legal drugs. The import and distribution of illegal drugs are often controlled by gangs. Due to lower quality (adulteration of the drug and contamination with other often harmful substances) and a risk premium associated with illegality, it is expected that prices of illegal drugs will be higher than those in legal competitive markets and the quality of drugs will be lower. Therefore, the legalization of a previously illegal drug like cannabis is likely to change market conditions to varying degrees (Beck & Prinz, 2024). Hypothetically, it can be assumed that the price for a unit of cannabis, adjusted for quality, will decrease. The demanded and traded quantity of cannabis, adjusted for quality, will increase. The own-price elasticity of cannabis demand plays an empirically decisive role here. The demand for other legal drugs, especially alcohol and nicotine products, would decrease if these products were legal substitutes for cannabis, although cannabis, alcohol and tobacco could also be complements. Furthermore, in the second pillar, the market dynamics of complete release would likely lead to product differentiation and marketing activities to expand consumption (Beck & Prinz, 2024).

In recent years, changes have already been observed in the market for cannabis products. From 2011 to 2021, the price of cannabis resin has only increased by 3%, while it has decreased by 6% for herbal cannabis. The potency of cannabis resin has nearly tripled, while for herbal cannabis, it has increased by about one and a half times. The retail price

for cannabis resin was approximately €6 to €10 per gram, and for herbal cannabis, it was €8 to €12 per gram (Beck & Prinz, 2024).

Due to the novelty, the mentioned ideas are hypothetical. However, there are studies from legislation that have previously legalized recreational cannabis use. The autonomy of recreational consumption increased, and alongside the decline in the consumption of other drugs, there was also a decrease in alcohol and tobacco consumption. However, there was not sufficient evidence regarding the reduction of drug-related crime. The Canadian experience suggests that alongside the legalized market, an illegal market can still persist. Consistent with the positive results, there was neither an increase in the consumption of other illegal drugs nor an increase in alcohol and tobacco consumption. Although cannabis consumption increased due to the legalization of recreational use, it cannot be described as an uncontrollable cannabis epidemic (Zvonarev et al., 2019; Anderson & Rees, 2023; Fastenmeier & Söllner, 2023).

Another approach to estimating the potential market for recreational cannabis used by managers is the assessment of the Total Addressable Market (TAM), Serviceable Addressable Market (SAM), and Share of Market (SOM) for recreational cannabis in Germany, as well as market trends and investor interest. With its large population and advanced economy, Germany is poised to become one of the largest recreational cannabis markets globally. Estimates suggest that the potential market size could reach over €10 billion by 2025 (Prohibition Partners, 2023). Another study by the European Cannabis Report (2019) projects that the German cannabis market could be worth €16.2 billion by 2028, including both medical and recreational segments. Figure 1 shows the estimated German market for illicit and medical use from 2020 until 2025. These estimates underscore the significant potential of the German cannabis market.

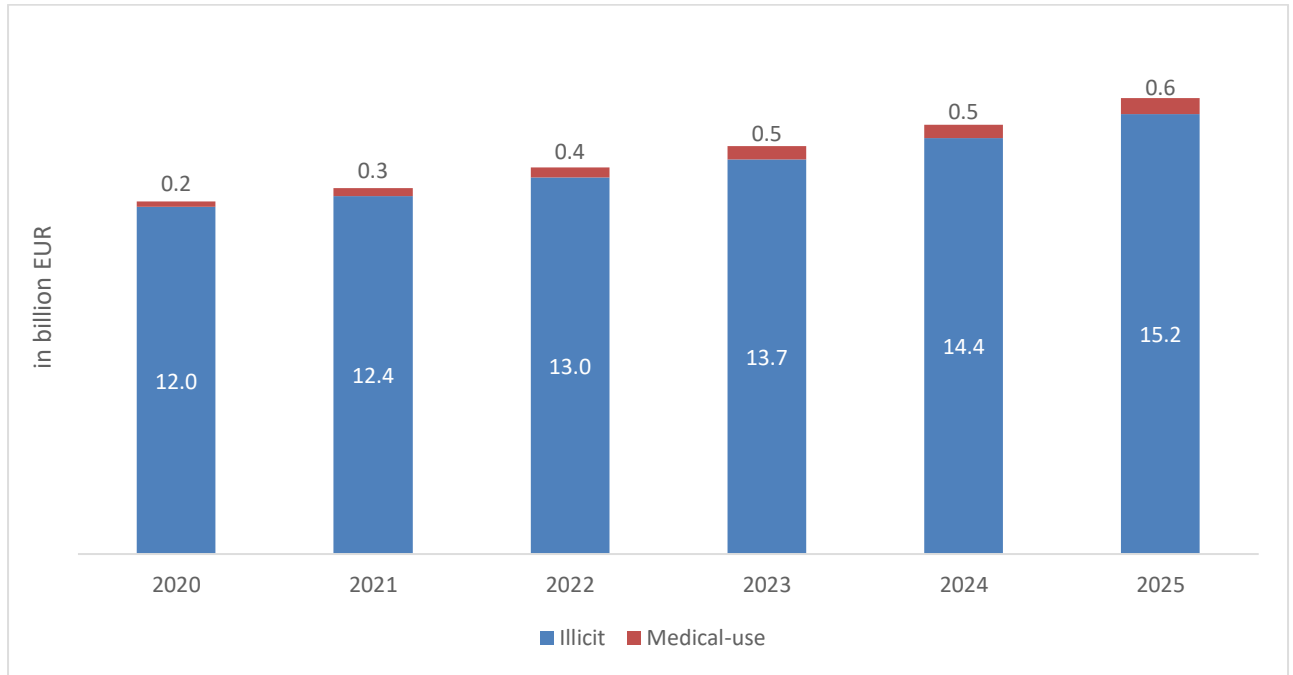


Figure 1: Cannabis sales Germany 2020 – 2025 (Statista, 2023)³

To better understand the market dynamics, it is helpful to break down the market size into three components: TAM, SAM, and SOM. The Total Addressable Market (TAM) represents the entire potential revenue opportunity for recreational cannabis in Germany. It is estimated to be around €5 billion (Prohibition Partners, 2020). Another source, the Brightfield Group (2020), estimates the TAM for the German cannabis market at €3.2 billion by 2023, taking into account both medical and recreational use. The TAM is an important metric for understanding the market's potential and can help businesses and investors gauge the scale of the opportunity.

The Serviceable Addressable Market (SAM) is a more focused metric, representing the portion of the TAM that can be realistically served by the industry. The SAM for recreational cannabis in Germany is estimated to be around €2 billion (Prohibition Partners, 2020). This figure considers various factors, such as the existing infrastructure, distribution channels, and regulatory constraints that limit the market's growth potential.

The Serviceable Obtainable Market (SOM) refers to the portion of the SAM that a specific company or group of companies can capture. In the case of the German recreational cannabis market, the SOM is still uncertain, as the market is in its early stages and rapidly evolving. As the market matures and more firms enter the space, the competitive

³ converted with exchange rate \$1=€0,9173 (ECB, as of 04.04.2023)

landscape will become clearer, providing a better understanding of the potential market share for different players.

Market trends and investor interest also play a critical role in shaping the development of the German cannabis market. Over the past few years, there has been a significant inflow of capital into the cannabis industry, with several high-profile initial public offerings (IPOs) and private placements. Examples include the German cannabis company Demecan, which raised €7 million in an IPO in 2018, and the Canadian cannabis company Canopy Growth, which raised €3.5 billion in a private placement in 2019 (Marijuana Business Daily, 2019). Other firms, such as Aurora Cannabis and Aphria from Canada, have also entered the German market through acquisitions of local companies. In 2017, Aurora acquired Pedanios, the then-leader in the medical cannabis market. According to Aphria, following its acquisition of CC Pharma, the German market offers significant strategic potential for the company (Bloomberg, 2017). Thus, it is clear that foreign companies or investors are interested in the German market. The aforementioned numbers indicate that Germany has a very large market potential.

However, besides legal and health-related critical arguments that cannot be discussed here, there are economic concerns that could influence the potential market potential. Critics argue that CanG will not achieve the containment of the black market. They even fear an expansion of the black market, as now individuals can procure up to 25 grams of marijuana from the black market without fear of punishment. This could still be attractive, considering the obligations one undertakes when joining a cultivation association. Thus, the illegal acquisition of cannabis would remain a problem despite legal procurement options. However, this would change once the second pillar of the legislation, which envisages sales through speciality stores, comes into effect. Nevertheless, another concern is that dealers, assuming they only carry the permitted quantities, would face less severe prosecution, leading to increased incentive to relocate their illegal activities to Germany. However, if previously illegal dealers operate within the framework of the law, they become legal dealers, so this would not be a problem (Beck & Prinz, 2024). In this hypothesis, the potential market share for legitimate businesses, especially under the first pillar of the German cannabis policy, would potentially decrease through black market competition. In order to assess the strategic potential of companies, the next chapter will look at different models.

3 International Models of Cannabis Distribution

The following chapter will look at different international models regarding the legislation and legalization of recreational cannabis in different pioneering jurisdictions, with an emphasis on the business aspect of the matter. The choice of the models, on the one hand, reflects model countries and pioneers being cited in literature frequently. On the other hand, Uruguay, the United States, the Netherlands, Canada and Spain are very interesting cases as they differ a lot in their ways and means of cannabis legalization, legislature and, thus, business opportunities. For detailed comparison, see Appendix 1 to 5.

3.1 Model Comparison

The aforementioned models of recreative cannabis distribution in five different jurisdictions show several similarities but, all in all, are quite different in various aspects. All countries have legalized recreational cannabis to varying extents, allowing adults to possess and consume cannabis under certain regulations. The varying extent can be seen in de-facto legalization, officially rather than in tolerization, like in the Netherlands, legalization at the federal or state level (i.e., USA), or regional specifications like in Canada. Each country has established regulatory frameworks to govern the production, distribution, sale, and consumption of recreational cannabis. Generally, all countries restrict recreational cannabis use to adults above a certain age, typically 18 or 21 years old. Legislation in these countries often includes provisions aimed at promoting public health, such as labelling requirements, product testing, and restrictions on advertising. Governments in these countries impose taxes on recreational cannabis sales to generate revenue and fund regulatory efforts, public health programs, and other initiatives.

However, there are significant differences in certain aspects, such as the legalization model. Uruguay has implemented a state-controlled model, where the government oversees the entire cannabis industry. In contrast, other countries, or rather, certain US States, have adopted more market-based approaches with varying levels of government involvement. Spain, especially, has a large emphasis on CSCs, which shows a large number of similarities to the German model. The retail distribution of cannabis varies across these countries. For example, Canada and some U.S. states allow private dispensaries, while others have government-run retail stores (e.g., some provinces in

Canada). Policies regarding the home cultivation of cannabis differ. Some countries allow it with restrictions, while others prohibit it entirely.

4 Methodology

The following chapter outlines the research design, data collection, sampling and data evaluation in order to answer the aforementioned research question.

4.1 Mixed-Method Approach

In social and business science research, there are primarily two methodologies: quantitative and qualitative empirical research. The hallmark of qualitative research is that, unlike the quantitative approach, it does not estimate the probability that the results are representative of the entire population based on large samples. Instead, it delves deeply into individual perspectives. Both methodological branches utilize methods such as surveys, observation, and content analysis for data collection, but they differ significantly in their implementation due to their distinct epistemological goals. Surveys are particularly prevalent in quantitative research. Because it is challenging to amend results post-collection, these surveys are meticulously designed with clear objectives and follow a highly structured format. Quantitative surveys typically use standardized questionnaires, which can be administered in person, via phone, or through written forms such as mail or online. Respondents are usually provided with predefined answer choices (Häder, 2015).

In qualitative research, methods such as interviews, observation, and content analysis are utilized. The aim and approach of qualitative research differ from quantitative methods, focusing on interpretive techniques rather than standardized ones. This approach emphasizes generating and analyzing data through non-standardized, interpretive methods, deriving insights from individual cases rather than large samples. Qualitative surveys often involve semi-structured interviews, where researchers follow a flexible question guide and adapt based on respondents' answers. In narrative interviews, only an initial prompt is provided, allowing for an open-ended response (Häder, 2015). This openness helps generate detailed understanding and experiences from the participants' perspectives.

Unlike quantitative research, which seeks to standardize and minimize researcher influence, qualitative research deeply examines individual cases, making prior

standardization impossible. This adaptability allows for new insights to emerge during the research process (Häder, 2015). Qualitative methods require careful sample selection, focusing on typical cases, which makes broad generalizations difficult. The detailed nature of individual interviews means only a few can be conducted due to time and cost constraints. Additionally, there's a risk of researcher bias, where the researcher's influence might inadvertently steer interviews towards preexisting opinions (Lamnek, 1995). In content analysis and observation, qualitative research emphasizes interpreting observed data rather than quantifying features. Various media such as newspapers, books, documents, and films can be analysed, considering both present and absent information. Group interviews are another qualitative method, generating data from participant discussions in controlled settings (Lamnek, 1995). While qualitative methods offer deeper insights, they are complex and yield a substantial amount of material, posing challenges in data management and analysis.

To grasp the advantages of each methodological approach while balancing out the disadvantages, this paper uses a mixed-methods approach. Mixed methods research integrates both quantitative and qualitative research techniques within a single study to provide a comprehensive analysis of the research problem. This approach allows researchers to draw on the strengths of both methodologies, addressing the limitations inherent in using either method alone (Kelle, 2022). It combines qualitative and quantitative data collection and analysis techniques. It is complementarity as this approach uses qualitative data to explore complex phenomena and quantitative data to measure and test specific hypotheses. Mixed methods provide a fuller understanding by capturing both numerical trends (quantitative) and in-depth insights (qualitative). Mixed methods allow researchers to adapt their approach based on the research question and evolving findings. Qualitative data add depth and detail to quantitative findings, providing context and meaning that numbers alone cannot offer. The integration of qualitative insights helps interpret complex statistical results. Lastly, mixed methods can address research questions at multiple levels simultaneously (Kelle, 2022).

4.2 Qualitative Content Analysis

4.2.1 Semi-Structured Interviews

Interview research encompasses various methodologies, which can be broadly classified based on structure and interaction style. An interview in research is a systematic conversation between a researcher and a participant aimed at gathering scientific data. The structured nature of interviews ensures that specific research questions are addressed. While some questions are predefined in an interview guide, the format also allows flexibility for exploring new insights through open dialogue (Hug & Poscheschnik, 2015). There are different types of interviews: open, closed and standardized interviews. Open interviews involve open-ended questions, encouraging respondents to share their thoughts freely. They are guided by loose hypotheses and allow significant flexibility, whereas closed interviews follow a strict set of predefined questions, limiting respondents' freedom to elaborate. Standardized interviews feature a mix of structured and semi-structured questions, with a higher degree of closed questions in a specific order (Aghamanoukjan et al., 2009).

In qualitative research, interview guides serve as a flexible framework for interviews. They consist of open-ended questions that allow participants to respond freely, ensuring that essential aspects of the research question are covered. This guide is not rigid and can adapt to the flow of the conversation, allowing the researcher to probe deeper when necessary (Flick, 1999). Qualitative research often involves deliberate sample selection based on theoretical or structural characteristics relevant to the study. This can be adjusted during the research process. However, ensuring that the sample is representative poses a challenge, as qualitative methods focus on detailed case studies rather than broad generalizations (Friebertshäuser, 1997). Reaching potential interviewees may require navigating through gatekeepers. Offering anonymity can help secure participation. Recording interviews is crucial for maintaining focus and ensuring an accurate account of the conversation. These recordings are then transcribed for analysis, with varying levels of detail depending on the chosen evaluation model (Mayring, 2000). The following chapter describes the evaluation process of the mentioned interviews.

4.2.2 Evaluation

Inductive category formation, as proposed by Mayring (2000), is a structured method for qualitative content analysis aimed at systematically interpreting textual material. This approach differs from quantitative methods, which involve statistical calculations by

focusing on the systematic interpretation of the content. Within the contextualization, the collected material is placed within its communicative context to preserve the original context of the text and its intended impact. A systematic and rule-based process is followed to ensure consistency and reliability. A specific procedural model is developed for each study, outlining the steps of analysis and the sequence of operations (Mayring, 2000).

Each step in the analysis process follows predefined rules that must be justified. This distinguishes qualitative content analysis from free interpretation, ensuring a structured approach. Categories are central to qualitative analysis. They are constructed and justified based on theoretical models and the state of research, integrating substantive arguments over procedural decisions. There is a definition of the theme and focus of the analysis based on the research question and relevant theory, identifying important content aspects for the study. The entire content is divided into relevant meaning units, condensing essential statements grammatically while excluding irrelevant text elements (Mayring's Z1 rule) (Mayring, 2000).

The next step is generalization. Paraphrases are generalized to a chosen level of abstraction, omitting irrelevant and duplicate paraphrases while retaining those of higher abstraction (Mayring's Z2 rule). This step is followed by categorization. Categories from generalized paraphrases are formed by merging similar ones, eliminating irrelevant ones, and retaining important ones. This reduction process is iterative, grouping paraphrases into categories (Mayring's Z3 and Z4 rules) (Mayring, 2000). Within the evaluation and reflection step, there is a continual assessment of whether the chosen categories are effective for qualitative evaluation and necessary revisions (Mayring, 2000). Inductive category formation in qualitative content analysis offers a rigorous, systematic approach to interpreting textual material. By adhering to structured rules and integrating theoretical frameworks, this method ensures reliable and valid analysis, providing deeper insights into the research subject (Schirmer, 2009).

4.2.3 Sample

Three interviews with experts from the German cannabis market field were recruited due to their expertise in the market. Despite attempting gender diversity in the recruiting, all three experts are male. The interviews were conducted between 7th June 2024 and 5th May

2024, recorded and then manually transcribed. To grant anonymity, the interview partners from here on are cited as IP1 (= interview partner 1), IP2 and IP3.

4.3 Survey Data and Sample

An online survey was conducted between the 1st and 15th May 2024 via an online platform. The survey was shared with the author's extended social group via social media and e-mail. The survey is evaluated descriptively using the statistical software SPSS. The survey consists of five demographic variables (age, gender, occupation, highest education and region of living), seven questions regarding usage habits, ten questions about purchasing preferences and behaviour and five questions regarding cannabis brands. The answers to each question could be chosen from a list, although the coding differs depending on the relevant question.

The sample size is $n = 209$. 115 (55 %) of the sample are male, 92 (44 %) are female, 2 (1 %) did not associate with either option. 19 (9.1 %) are between 18-24 years old, 54 (25.8 %) between 25-34, 70 (33.5 %) between 35-44, 37 (17.7 %) between 45-54, 25 (12 %) between 55-64 and 4 (1.9 %) are 65 years and older. Except for one sampled person (Austria), all live in Germany. Thirty-two people (15.3 %) in the sample finished secondary school (in German: Realschulabschluss) as the highest education, 52 (24.9 %) are high school graduates (in German: Abitur) and 114 (59.3 %) have a university degree (Bachelor, Master, PhD). 107 (51.2 %) people in the sample are full-time and 31 (14.8 %) part-time employees. Four (1.9 %) are retired, 42 (20.1 %) are self-employed, 13 (6.2 %) are students and seven (3.3 %) are unemployed. After outlining the sample and data, the results of the mixed method approach are presented in the next section.

5 Results

The following chapter shows the results of the survey and the qualitative content analysis based on the interviews that were conducted.

5.1 Survey Results

The survey is distinguished into three main categories: medical and recreative cannabis consumption, purchasing behaviour and preferences and cannabis brands.

5.1.1 Medical and Recreative Cannabis Consumption

Of the sample around half of the sample (104 people) answered that they have used cannabis. Of this subsample, five (2.4 %) consume daily, ten (4.8 %) weekly, six (2.9 %) monthly, 26 (12.4 %) seasonally and 57 (27.3 %) annually, which shows that for the majority of the users in the sample, consumption is not a regular occurrence. The consumption frequency is shown in Figure 2. With only 3.3 % (seven people), medical prescriptions played a marginal role in the sample.

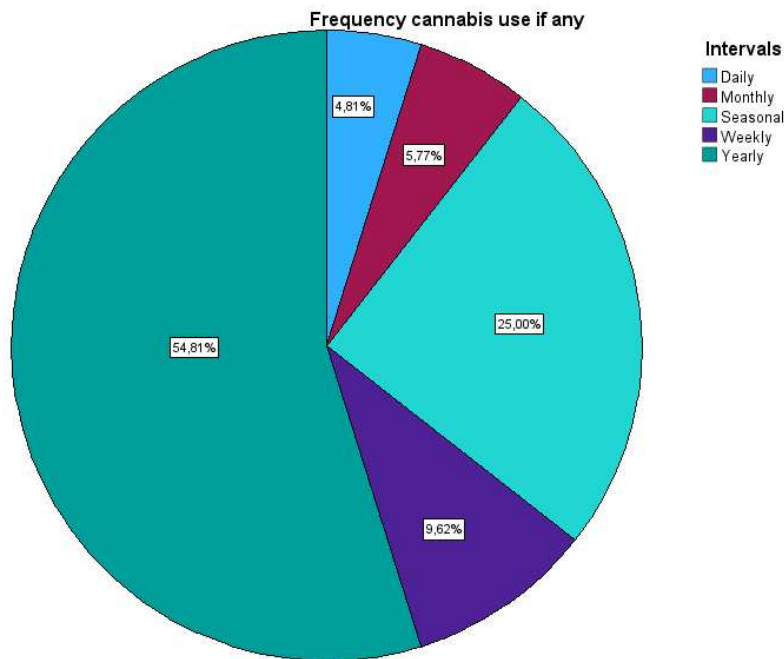


Figure 2: Frequency of cannabis use if any

Regarding the monthly spending amount of cannabis users, 50 (23.9 %) claimed that they did not purchase cannabis. 30 (14.4 %) paid less than 20 € per month, 13 (6.2 %) between 20 € and 50 €, five (2.4 %) spent up to 100 € and six (2.9 %) spent more than 100 € per month on cannabis.

Then, the new legal changes were integrated into the survey. As figure 3 shows, the 92 (44.1 %) (strongly) favoured the legalization. 66 (31.6 %) were neutral, while 50 (23.9 %) were (strongly) against it. Similarly, there was no consensus in the sample about the willingness to try cannabis after legalization. 72 (34.4 %) would try it, and 57 (27.3 %) would make it, depending on the circumstances. 79 (37.8 %) claimed that they would not be interested. There was a similar lack of consensus regarding prescribed medical cannabis if obtaining a prescription would be easier. About 40 % of the respondents viewed the medical use of cannabis as somewhat or very likely, and around 30 % as

somewhat or very unlikely. About 14 % each were either neutral or have not answered this question.

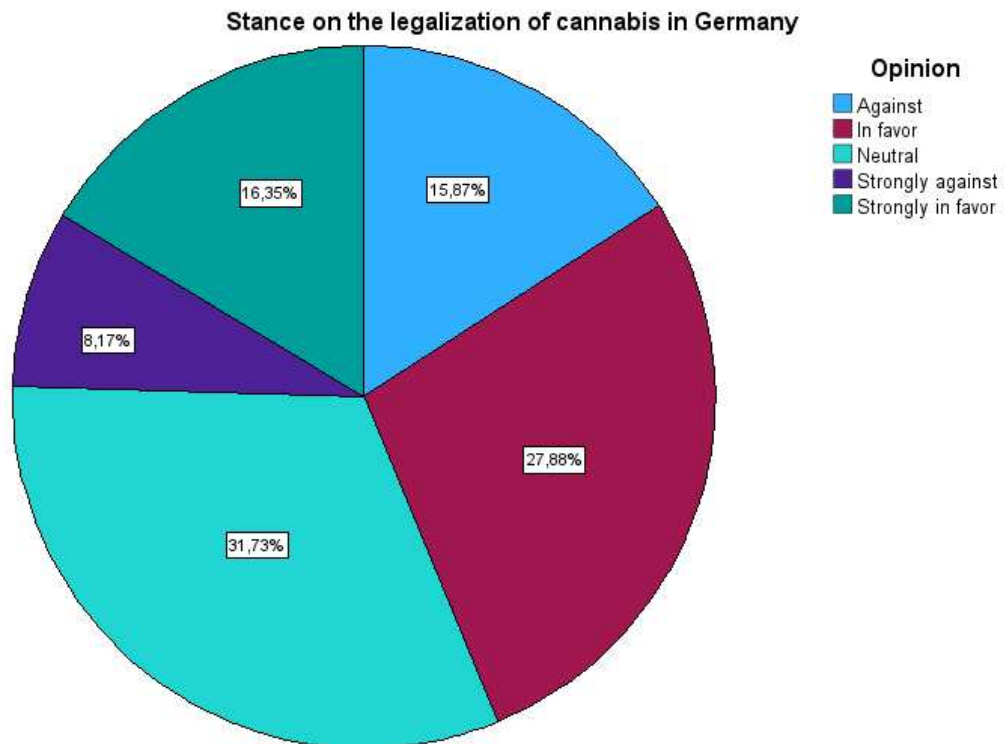


Figure 3: Stance on legalization

The survey on medical and recreational behaviour showed very mixed consumption behaviour where regular users and medical users were a minority in the sample. The following chapter describes the purchasing behaviour and preferences.

5.1.2 Purchasing Behaviour and Preferences

One part of the survey were questions about the preferences for cannabis consumption. Amongst the respondents, smoking (joints, bong, pipes, blunts) was the most popular form with 36.8%, followed by edibles (cookies, gummies, chocolates) with 24.4%, oils with 23% and vaping with 7%. Others were against consumption or did not answer. Quality was the most important factor when purchasing cannabis. Other more rarely mentioned factors were potency and accessibility. The high importance of quality was confirmed by the importance of quality assurance and safety testing when purchasing

cannabis. Only a very small minority, less than 5%, considered quality to be not important. Around a tenth of the respondents were neutral on this question.

As quality seems to be a huge concern, the next set of questions focused on the legal market of cannabis purchase under the assumption that quality control is only given in a legally controlled market. Asked for the preferred method of legal cannabis purchasing, 26.8% of the respondents mentioned pharmacies, 22% physical shops/dispensaries, 21.5% online shops, 6.7% delivery services and 5.3% social clubs. Others highlighted their refusal to buy any or did not answer. The willingness to pay for a legal gram of cannabis is shown in Figure 4.

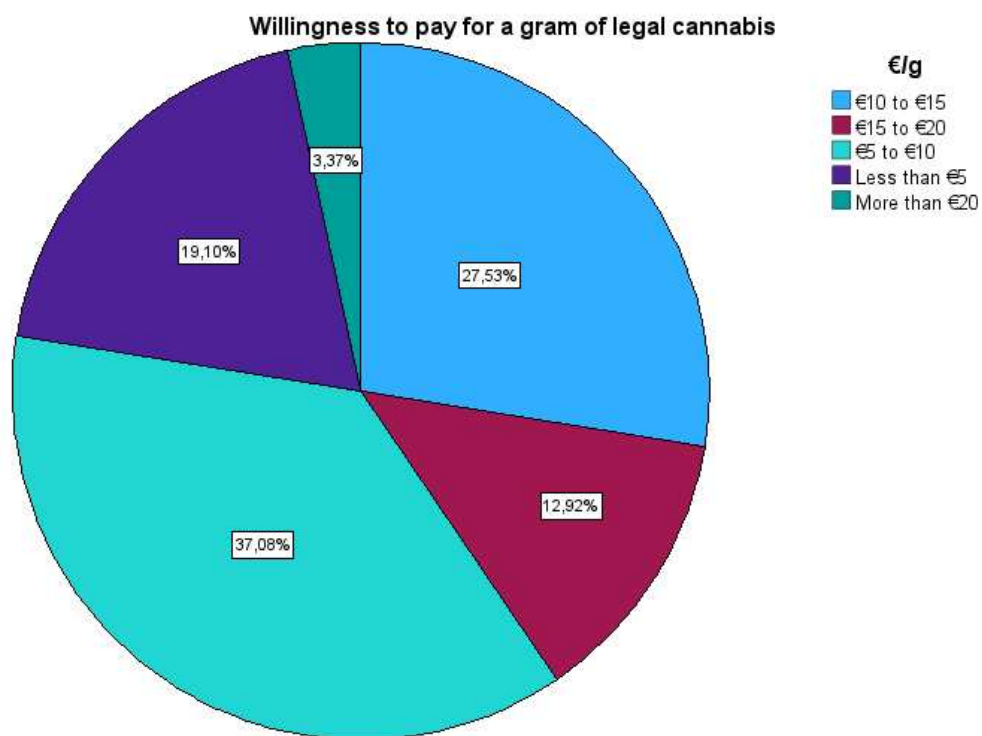


Figure 4: Willingness to pay

Besides purchasing, the new Cannabis Act enables the options of social clubs and cultivating cannabis. Roughly half of the respondents were not interested in cultivating cannabis, and roughly a quarter answered with maybe. Only 26 surveyed people in the sample were interested in cultivation. The option of social clubs as legal places of purchase had similarly ambivalent results, with over a third of respondents not being interested in social clubs and another third answering “maybe”. Similarly, to own

cultivation, only a fraction of 31 respondents were interested in social clubs for legal cannabis purchases.

Another interesting aspect of purchase behaviour and preferences was the advantages and disadvantages between the legal and illegal markets. However, generally, roughly 40% of the respondents would prefer buying legally despite regulations and taxes, with an equal number of respondents being unsure how regulations and taxes would affect their decision. Only roughly 20% were more price sensitive and would be less likely to buy legal cannabis if taxes and regulations increase the price significantly. In this context, the respondents were asked about the likelihood and motivation to purchase cannabis illegally instead of from legal sources. The likelihood of illegal cannabis purchases is shown in Figure 5.

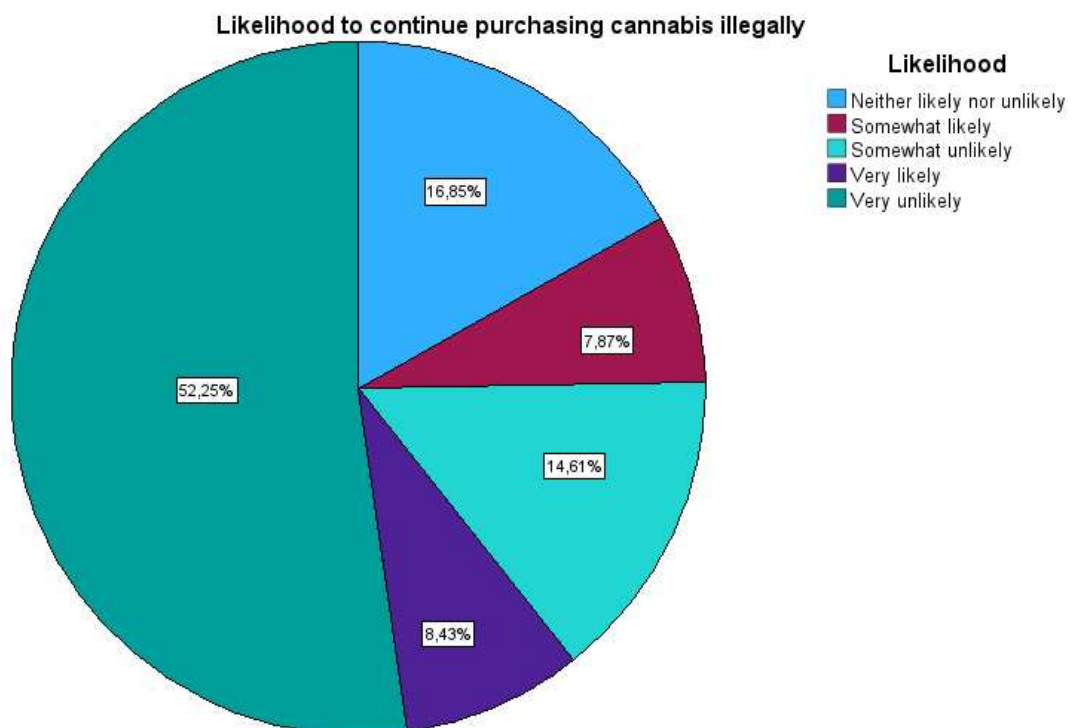


Figure 5: Motivation of illegal purchase

As Figure 4 shows, the vast majority intended to purchase cannabis from legal sources, whereas a sixth was undecided. Only around a fifth of the respondents expressed a likelihood to continue illegal purchases. When asked about the main motivations for continuing to purchase illegally, frequent answers were avoidance of taxes or regulations,

trust in the current supplier, better quality, lower prices, convenience, habit, and refusal to be a member of a club.

5.1.3 Cannabis Brands

The third survey category considered the brand preferences in the cannabis market. Figure 6 showed that amongst the sample, familiarity can be seen as low to moderate, as the large majority was not familiar with any brand at all.

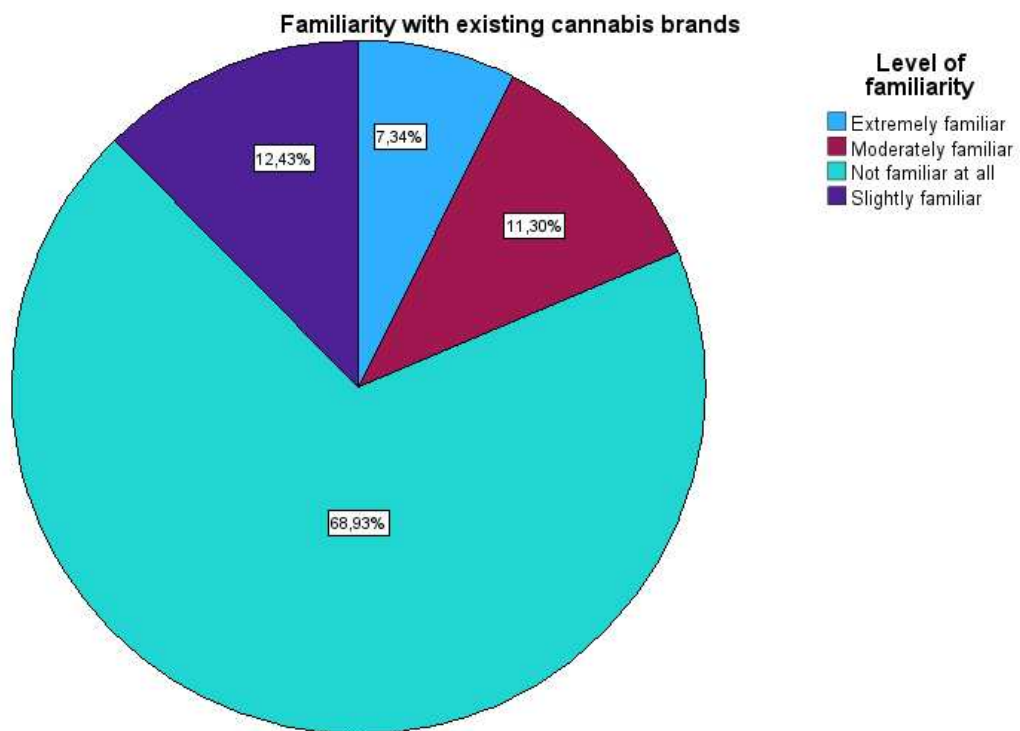


Figure 6: Brand familiarity

The lack of familiarity likely also explained why the majority of respondents were neutral when asked about the perception of the quality of familiar brands. Of the remaining respondents, the quality of familiar brands was predominantly judged as high or very high quality. As Figure 7 shows, this is relevant as the brand can influence the decision-making process at the purchase. Whereas ca. 40% were neutral, which might also be related to lack of brand knowledge, only ca. 15% of respondents would not consider branding for cannabis products at all. The origin, however, only matters to some respondents. More than half of respondents put more emphasis on quality and price than the brand origin.

Roughly a third preferred local firms, whereas ca. 10% of respondents favored big international brands such as Tilray, Aurora, and Cookies.

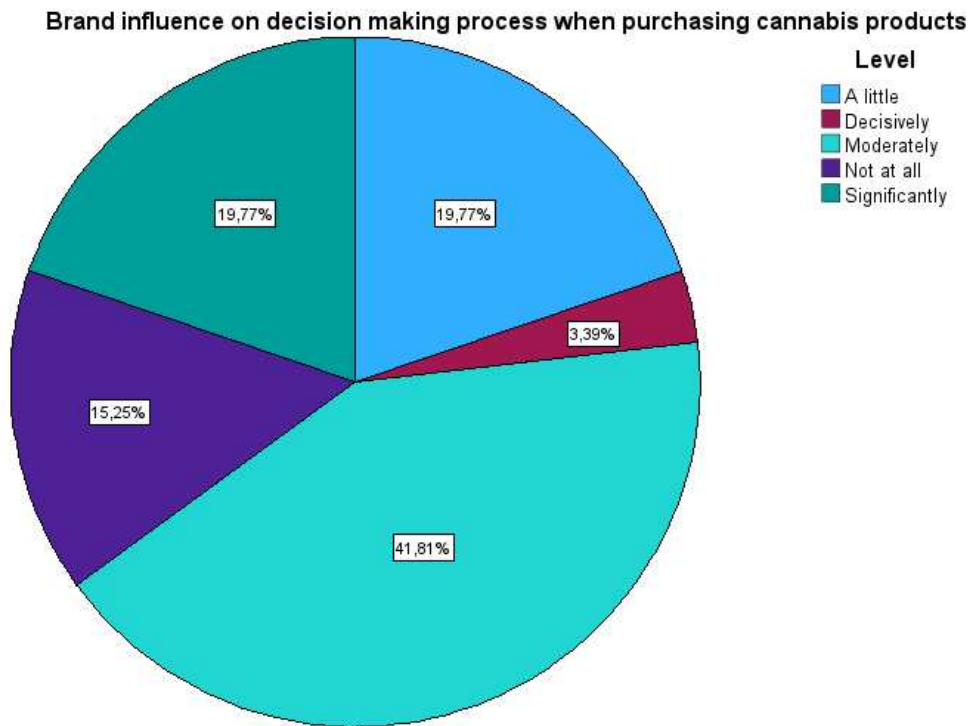


Figure 7: Brand influence on purchase decision

The reasons for the competitive advantages of brands were expressed as aspects like better customer service, quality, marketing campaigns, social responsibility initiatives and unique product offerings.

5.2 Interview Results

The following sections outline the results of the three expert interviews that were conducted. The categorization processes showed that there are five main categories to distinguish: the contrast between the medical and recreational market, the regulatory influences and implications, strategy and competition, and marketing and challenges.

5.2.1 Medical and Recreational Market

First, IP2 emphasized that there is a two-tier medical market as in Germany, where there are essentially two groups of patients. First, there is the self-paying market, where patients pay for their products and prescriptions themselves. Second, there is the reimbursement market, where patients receive cost reimbursement. Ultimately, every prescription is

written by a doctor, but if there is a self-paying patient, they have a significant influence, depending on the doctor, on which product ends up on your prescription. These two patient groups differ in terms of product quality and requirements. IP2 highlighted the distinction with an example: a patient with multiple sclerosis might need a specific product with a certain cannabinoid profile that alleviates their symptoms. They might always need the same product, which could have around 16 % THC, but it works best for managing their condition. Similarly, pain patients might need stronger products. These pharmaceutical attributes are crucial for patients with severe medical conditions. On the other hand, self-paying patients are more like those in a recreational market, except for the prescription requirement. They can choose freely among pharmacies, which may have different pricing, and make their decisions based on attributes like THC content and the physical appearance of the product. This makes the self-paying market more akin to the recreational market seen in places like Canada. The needs and preferences of these two groups of patients are, therefore, quite distinct.

IP1 pointed out that, in his opinion, the medical cannabis market will differ significantly because it adheres to much higher quality standards mandated by law, regulating lab requirements, processing, and dispensing. This inevitably results in higher prices, but experience has shown that it also leads to considerably better quality, which can be available in the recreational market as well, albeit at higher prices. For the consumer, this means there will be lower-quality cannabis available at a cheaper price in the recreational market. Further, IP1 assumed that initially, the quality might not be good because clubs are likely to attract people who will buy and obtain cannabis and growers who will try to integrate themselves somehow. Technically, all of this is not allowed by law, but it will happen according to the view of IP1. Contrary to this position, IP3 predicted a parity of quality. If full legalization occurs, including the establishment of coffee shops or similar venues, IP3 expected that they will need to meet similar standards regarding microbiology and quality. There likely will not be significant differences in requirements. A new law will probably outline the criteria, including aspects like microbiology, contaminants, metals, etc. The quality will likely remain high, not just because it must be, but due to intense competition. If American manufacturers are allowed to enter the market, many of whom have already pre-arranged contracts, they will undoubtedly bring their highest quality products and establish facilities in Germany to meet the same standards as in the medical market.

IP3 further argued that there will be a large spillover from the medical to the recreational market. The manufacturers will remain the same as those currently in the medical market. IP3 believed that once there is a true recreational market, manufacturers will switch and produce medical products in minimal quantities, focusing primarily on the recreational market. However, if the standards remain the same, it will not matter whether the products are for medical or non-medical purposes. It is possible that there might be an intermediate step where products are sold in pharmacies and thus remain strictly medical, which would have been ideal from the beginning but is no longer feasible. If full legalization happens, the standards for contamination and quality will still be relatively high. Nevertheless, the quality of the growth will not be as good; it will be inferior and more expensive, and no one will want to do it if they cannot make money. Additionally, the whole time, the 500 members will be complaining about the poor quality, which makes it unfeasible.

For IP1, the new legislation represented positive developments for existing companies. Cannabis is no longer classified as a narcotic but can be prescribed like any other prescription medication. This change will significantly simplify the prescription process for doctors and increase awareness within the medical community. Doctors will no longer fear the extensive documentation requirements or feel that cannabis should only be prescribed as a last resort.

In practice, as IP1 pointed out, while recreational use remains legally restricted, it is expected that some consumers might still try to access medical cannabis through any available means, as observed in the USA. Doctors there have seen the business potential in prescribing cannabis for conditions like back pain. The reclassification will likely lead to an increase in specialized doctors catering to this need. The medical cannabis market is also advancing rapidly, with companies investing heavily in research and development. The potential therapeutic applications of cannabis have expanded significantly in recent years. According to IP1, this legislative change will further enhance these developments, offering new treatment options and increasing the patient market, driven not just by patient demand but also by a growing recognition among doctors of cannabis's therapeutic benefits.

5.2.2 Regulatory Influences and Implications

IP1 pointed out that in Germany, the move towards legalization has a positive impact because decriminalization allows for cannabis consumption, which was previously not

permitted. The regulatory conditions are being adjusted to enable this. Looking at it more globally, other countries that have been pioneers in this field are likely just waiting eagerly for markets to open commercially so they can introduce their brands here. Interestingly, in the industry landscape, several actors are gearing up, even extending into the medical sector, to be ready with the infrastructure and brand names once further legalization occurs.

According to IP1, for businesses involved in medical cannabis, this legislative shift could be a significant opportunity. Although the major anticipated changes towards full legalization have not occurred yet, focusing on what is currently possible is essential. It is unrealistic to expect a complete opening of the market within the next two years. However, companies that remain active in the regulated market can thrive, and the quality differences suggest that medical cannabis users will likely continue to seek prescriptions for higher quality, medically supervised products rather than turning to social clubs.

Similarly, IP3 was highly sceptical of the option of social clubs and home cultivation. IP3 considered that the idea of how social clubs should function, like in Spain, just does not make sense. In Spain, they allow people to grow at home without strict regulations, which poses the question of why there needs to be social clubs with so many rules in Germany. He hypothetically asks why he could not team up with ten friends and grow together without needing a social club if he could grow alone at home. The current rules invite misuse that leads to uncontrolled growth and overregulation that no one can enforce.

At the same time, IP3 argued that the status quo of legalization will remain without further expansion and is very sceptical of social clubs. IP3 questioned the need for social clubs if people can grow cannabis at home. In his opinion, people will just grow it and share it with their friends. Nobody will control it strictly. However, IP3 further argued that if, in three or four years, everyone can legally smoke, and this becomes a normal part of society, as it will, and if it is criticized or seen negatively, people will simply opt for normal sales. They will question why it is any different from other activities if people are already smoking at home or on the street. Eventually, there will be no more arguments against it, as it will be so ingrained in society.

IP2 also focused on current opportunities in this question instead of speculating about future scenarios and draws comparisons from his professional expertise in the medical cannabis sector. In the medical field, there is an increasing volume, and the self-payer

market is growing very strongly, which could be an effect of this whole legalization debate. IP2 further pointed out that, as a company, it is not relevant yet, as the prescription of cannabis becomes a whole different matter. Nowadays, with every cannabis prescription, every patient and doctor has an ID, activity, and medication. The patient and the quantity are tracked. With the legalization, there is the anticipation that the market for out-of-pocket payers will grow incredibly. There are high entry barriers in the market, but once in the market, there is a large growth potential.

5.2.3 Strategy and Competition

IP3 was highly sceptical of the German market and pricing opportunities. He anticipated that the large manufacturers who are already in the market, whether through investments or directly, are already present but only with a foot in the door because they realize they cannot make significant profits in the current market. They will fully enter the market and drive prices down further. Currently, the German structure, with about ten pharmacies handling 80% of all sales, plays a big role in pushing manufacturers to lower prices. If there were a free market where every corner store could sell, the price might even rise a bit. Many manufacturers will produce a lot, maintaining high but not the best quality. He further anticipated that initially, prices would be higher, but increased competition would push them down, reducing profit margins. Eventually, prices will drop to a point where many, including German producers, will not be competitive.

As for the value chain, IP2 explained that in the medical market, his company currently does quality control from the cutting or clone stage up to the final product. By auditing all their partners, not just on paper but also by visiting them, examining their processes and implementing improvements before everything is as we need it to be, they ensure everything fits their standards. Therefore, IP2 believed that it is very sensible to be involved from the beginning in terms of control. IP2 suggested that it enhances the value chain, but many companies do not have that fully integrated approach where they know everything. For IP2, it seemed senseless to build extraction or production facilities here in Germany when they already exist successfully elsewhere. Considering climate concerns and the energy consumption of these facilities, it makes more sense to look at the market in 10 to 15 years and produce in countries where you can utilize natural resources. However, there is a division of labour. For instance, IP2's company always

distributes and markets in Germany if the products are sold in Germany, but cultivation and processing can be done elsewhere if it is done well.

IP1 assumed that the cannabis market will be strongly driven by branding. People will build brand names that ensure a certain level of quality, but the actual quality may become less important as consumers start to choose based on brand perception, similar to how they shop in supermarkets. Brands with a streamlined product portfolio will likely dominate. Currently, in the medical cannabis sector, the market is flooded with products, and consumers do not have much choice as doctors prescribe them. However, doctors are also overwhelmed by the variety and unsure of what to prescribe. Unlike having a few standard medications like paracetamol or antibiotics, there are too many cannabis strains, with the only major differentiation being THC content, either high or low.

IP2 agreed with the importance of branding and sees it as the crucial competitive edge for the future transfer from the medical to the recreational market. Hence, it is important to figure out what can be done to differentiate and position a company in the recreational market now. IP2 stated that if a company really want to become big in recreation, it should focus on establishing a strong foothold now. The work with regulatory access partners and cultivation partners is an important part of this.

IP2 explained that the market has been flooded with new brands and surplus products. If a company does not establish a strong brand soon, they will struggle to compete. While marketing opportunities are limited, having a strong brand in Canada or elsewhere can make a difference. People do care about brands to some extent. For example, if they know a producer like Tweed is good, they will try their next product. This creates trust in the brand and its cultivation practices. If trust is built now, companies are better positioned when the recreational market opens up. Otherwise, companies will be competing with thousands of others, many with more resources. When the market truly opens, big players with substantial funds will enter. Therefore, it is crucial to grow in the medical sector now, doing what is possible to become stronger in the future. However, IP2 added that it is important not to waste money on developing products or recipes that may not be viable in the long term.

IP1 posited that in the future, like in the USA, factors such as taste and the balanced effect of cannabis will become more important in Germany. Here, controlling the entire value chain is beneficial because it allows better utilization of information at every level. While

focusing solely on distribution offers flexibility, having control over production to retail helps build a strong brand presence. This approach can be compared to creating a luxury brand that attracts customers in a unique way. Further, IP1 foresaw that there will be a trend of consuming cannabis in ways other than smoking, which will become more established. In the USA, edibles have been incredibly successful, reaching an audience that does not want to smoke but is interested in the effects. Currently, this will be prohibited when the classification and opening for clubs happen. However, there is hope that Germany will continue to open up with pilot projects and other initiatives in the future.

5.2.4 Marketing

From a marketing aspect, legally, advertising for cannabis, even medical cannabis, is strictly prohibited in Germany according to the new law. This contrasts with other markets where regulations are more lenient. IP2 pointed out that to see what works best, it is useful to look at America because they just do whatever they want, more or less. This includes formats, branding, and presenting everything as if it were candy for children. However, this would not be possible in Germany due to regulations. Hence, IP2 was not sure if it will ever be as significant in Germany due to the prohibition of advertisement. While there are always Instagram stories and an option to work through influencers to a limited extent, IP2 mentioned that for his company the code of compliance is crucial and product-related advertising is not possible currently.

IP1 stated that advertising is crucial, though, because his experience shows that consumers are more influenced by advertising than by the actual quality of the product. Similarly, IP3 argued that while advertising is not allowed, there are ways to bypass this restriction to some extent, such as through a bit of sponsorship or branding. As long as the product itself is not advertised, the brand can be promoted. This shows the importance of having a strong brand. For instance, brands could engage in sports sponsorships or have endorsements from celebrities. In Germany, some well-known personalities who use cannabis could promote the brand without directly advertising the product. They could say, "I trust this brand," without specifying the product. IP3 further argued that while he anticipated that the advertising regulations would be strict, perhaps even stricter than those for tobacco or alcohol, the focus will likely be on brand building rather than direct product advertising. Marketing will thus aim to establish the brand as the cooler option. This

strategy is already being seen with some sports sponsorships and testimonials, which will be a key approach moving forward. In this context, IP2 pointed out that in the USA, it is possible to see what really works in terms of branding, such as companies like Cookies. They have a strong brand now, mainly through their merchandise and other strategies, and they do not just sell cannabis. They have built a significant brand presence.

5.2.5 Challenges

According to IP1, one of the major criticisms of the new law now is that it does not effectively combat the black market. There is a limit of 500 club members, essentially creating a hurdle for free access. It is also unclear whether everyone will be able to afford it since growing cannabis within a club might initially be more expensive and done at a cost price compared to outside sources. If these barriers exist, people will still feel the need to stick to their original sources.

IP3 saw challenges in combination with the regulations for the recreational market. The current situation here is that medical approval is extremely complicated. Firstly, there are only three licenses for cultivation. It is difficult to acquire these licenses, which take several years and cost a lot. This is already the first hurdle, and in line with the views of IP3, this will not change much with recreational legalization. Additionally, a further hurdle in Germany is labour costs. The cultivation of cannabis comes with high ancillary wage costs, high employee costs and high electricity costs. On top of these external factors, there is currently no financial market willing to invest in this sector. No one wants to invest in a business plan where it is uncertain whether you can make a profit in the next two years.

So, investing is risky, and the strict regulatory environment and high operating costs make the prospects even more challenging.

IP3 also considered that the current media market makes distribution channels difficult. Even if opening dispensaries was possible, they would be regulated just like pharmacies. It would take a licensed pharmacist on site, youth protection measures, separate storage areas and such locations are expensive. This would primarily be viable for large manufacturers, including those already in the medical field, who may not fully support this yet. They already have agreements in place and will enter the market when feasible.

Smaller manufacturers might be able to carve out a niche market, but they would still need to comply with all the regulations, which is not easy.

According to IP2, market entry is a further challenge. For companies entering the market now, it will be very difficult at first. In phase one, there is not much to offer. In phase two, actors might want to be part of it somehow. But at a closer look at what is supposed to happen in phase two and so on, there are so many uncertainties about where production can take place, whether exchange between locations can happen, and all that. As a company, establishing a foothold in such conditions is tough. If you are producing for a few hundred people or even for a city like Berlin, there will be several players. Then, there is the question of whether exchanges can take place. IP2 highlighted this uncertainty that makes it difficult to predict the future.

In the case of IP2, the company, its medical status, the self-payer market, and the branding and website are trying to gradually move away from a purely medical image and position themselves more as a recreational brand. Depending on the angle, whether actors are more focused on the self-payer market or the medical market, it is a strategic decision. Targeting the self-payer market is more cost-effective and better. However, this is a decision each company has to make for itself. A look at the stock prices or the market performance of companies focused on the recreational sector shows that they are not having much success right now. Those with concepts aimed at the recreational market are not seeing much joy at the moment, according to IP2.

Following the results of the interviews with the experts, the results of the qualitative content analysis and well as the survey are discussed to answer the research question and summarize the findings.

6 Conclusion

Germany is another country that has recently legalized cannabis for recreational use, albeit with some restrictions. In 2017, the German government passed a law allowing the use of cannabis for medical purposes and later expanded this to allow for the cultivation of cannabis for medical use. The German government very recently legalized cannabis under

certain rules. Germany is expected to become one of the largest recreational cannabis markets in the world. Despite the potential size and growth of the German cannabis market, there are still many challenges and uncertainties facing firms looking to enter the market. These include navigating the complex regulatory environment, dealing with supply chain issues and competing with established players in the market. Hence, the research question of this thesis is to identify the factors that will determine the success of a cannabis firm when the new regulatory framework is implemented. The data for this research project comes from a consumer survey as well as three expert interviews.

As for the market potentials, the interviews show that the legal changes make the self-paying patients in the medical field very interesting for companies as their patients influence the choice of product prescribed, akin to a recreational market, due to their ability to choose among pharmacies based on product attributes like THC content and pricing although amongst the experts there is no consensus if self-paying cannabis is in the focus or there will be a shift towards recreational cannabis. The new legislation reclassifies cannabis, simplifying prescription processes and increasing awareness among doctors, potentially leading to more specialized cannabis-prescribing doctors. Enhanced research and development in the medical cannabis market will drive new treatment options and expand the patient market due to increased recognition of cannabis's therapeutic benefits.

Similarly, according to different views regarding the role of medical vs. recreational cannabis, there is a lack of consensus regarding quality. There is a scenario where the medical cannabis market maintains high quality due to stringent legal standards, leading to higher prices. With lower-quality, cheaper cannabis in the recreational market, with initial quality issues due to unregulated cultivation practices. Another scenario is that full legalization will equalize quality standards between medical and recreational markets, driven by stringent regulations and competition.

Contrasting the expert views with the consumer survey, the survey shows that cannabis consumption among the respondents was generally infrequent. Medical prescriptions for cannabis were minimal, although admittedly, the sample does not necessarily have to be representative in their consumption as they are a random sample. Concerning the likelihood of using prescribed medical cannabis if obtaining a prescription became easier,

there were mixed opinions on the future usage of cannabis and its medical applications. However, quality was the most important factor when purchasing cannabis, confirmed by the emphasis on quality assurance and safety testing. This could be a market signal that consumers favour more regulated cultivation processes and could hint at a market demand towards an equalization of medical and recreational cannabis, even to a potentially higher market price. This is supported by the result that only about 20% of the respondents were more price-sensitive and less likely to buy legal cannabis if prices increased significantly due to taxes and regulations.

A further indicator for a recreational market via the medical market is that respondents when asked about preferred methods of legal cannabis purchasing, preferred pharmacies over physical shops/dispensaries, online shops, delivery services and social clubs. Regarding cultivation, roughly half of the respondents were not interested. Similarly, over a third were not interested in social clubs as legal places for cannabis purchases. Also, most respondents intended to purchase cannabis from legal sources.

These market growth chances and customer sentiments are supported by the expected implications of the regulatory framework. The regulatory conditions are being adjusted to enable market expansion. Globally, other pioneering countries in the cannabis industry are likely eager to introduce their brands once markets open commercially. Various industry players are preparing, extending even into the medical sector, to be ready with infrastructure and brand names when further legalization occurs. Companies active in the regulated market can thrive, as medical cannabis users will likely continue to seek higher quality, medically supervised products rather than turning to social clubs. Home cultivation and social clubs are seen with scepticism, though. Further, it is argued that as cannabis use becomes normalized, society will eventually advocate for normal sales, seeing no difference between cannabis and other activities. There is an increasing volume and strong growth of the self-payer market, potentially influenced by the legalization debate. The anticipation is that the market for out-of-pocket payers will grow significantly. Despite high entry barriers, once companies enter the market, there is a large growth potential.

Regarding the success factors for companies, one factor is quality control, as implied earlier. A successful way is seen in the company's approach from the cutting or clone stage to the final product. This integrated approach enhances the value chain. It is

suggested that production remains in countries with natural resources, and distribution and marketing should happen in Germany. Further, there are anticipated evolving consumer preferences, emphasizing taste and balanced effects. Controlling the entire value chain is seen as beneficial, allowing better utilization of information. A trend is seen towards consuming cannabis in non-smoking forms, similar to the success of edibles in the USA. This is confirmed in the survey, where respondents claim that their most popular form of consumption was smoking (joints, bong, pipes, blunts), edibles (cookies, gummies, chocolates), oils and vaping are viable options.

One identified key factor for success, however, is branding. It is predicted that branding will drive the cannabis market, with consumers choosing based on brand perception, similar to supermarket shopping. Brands with streamlined product portfolios are likely to dominate. A flood of products in the cannabis market is foreseen, with THC content being the major differentiation. Establishing a strong brand now is essential, and expecting a spillover from the medical to the recreational market is seen as paramount for future success. While direct product advertising is restricted, there are ways to bypass these limitations, such as through sponsorships or branding. Brands can engage in sports sponsorships or celebrity endorsements without directly promoting the product. Advertising is more influential than product quality. This highlights the significance of having a strong brand presence in the market. Thus, the focus will be on brand building rather than direct product advertising. There are

Successful branding strategies in the USA, where companies have built a strong brand presence through merchandise and other strategies, indicate the effectiveness of branding beyond just selling cannabis products.

The survey confirms these assumptions about the importance of brands. Most respondents are not (yet) familiar with any brands, which likely impacts their perception of brand quality.

However, among those familiar with brands, many perceive them as high or very high quality. Brand familiarity can influence purchasing decisions, although a significant portion of respondents remain neutral, possibly due to limited brand knowledge. While some prioritize brand origin, with a third preferring local firms and a minority favouring big international brands, most prioritize quality and price over origin. Competitive

advantages for brands are attributed to factors such as customer service, quality, marketing campaigns, social responsibility initiatives, and unique product offerings.

Despite all the potential, there are six main identified challenges. There is criticism of the new law for not effectively combating the black market due to barriers like the limit of 500 club members and affordability concerns. There are challenges in the recreational market, such as limited cultivation licenses, high operating costs and lack of financial investment. There are distribution challenges, especially if dispensaries were to open, as they would be heavily regulated and expensive to operate. There are market entry challenges for companies entering the market due to uncertainties about production locations, exchange between locations and establishing a foothold in such conditions. Another challenge is strategic positioning: between a purely medical image and positioning a company more as a recreational brand, depending on who they target. Lastly, there are doubts about the recreational market performance, as some are sceptical that the recreational sector cannot have much success currently, as indicated by stock prices and market performance.

In conclusion and as the answer to the research question, this study shows that the success factors for firms to enter the new market are:

- The legalization of cannabis opens opportunities, particularly in the medical field, where patients influence product choice.
- Quality is paramount for consumers when purchasing cannabis, suggesting demand for regulated cultivation processes and potentially higher market prices.
- Consumers prefer pharmacies over physical shops/dispensaries, online shops, delivery services, and social clubs for legal cannabis purchases.
- Regulatory conditions are being adjusted to enable market expansion, attract various industry players, and pave the way for growth.
- Quality control enhances the value chain and improves brand perception.
- Branding is predicted to drive the cannabis market, with consumers making choices based on brand perception. Establishing a strong brand presence is essential for success.
- While direct product advertising is restricted, strategies like sponsorships or branding can bypass limitations and influence consumer behaviour.
- Familiarity with brands can influence purchasing decisions, with many perceiving familiar brands as high quality.

- Factors such as customer service, quality, marketing campaigns, social responsibility initiatives, and unique product offerings contribute to the success of brands.

The study has several limitations. One limitation is that the survey sample was random and hence included several respondents with little to no experience or knowledge of cannabis in any form, reducing the effective sample size and expertise of the respondents. Second, due to capacity reasons, only three experts could be interviewed, which limits the offered perspectives. Further, it limits the options of generalization as the experts are prone to tell their own perspectives. However, regarding future research and the novelty of the topic, there is a broad area for theoretical and practical research in this field.

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Appendix

Appendix 1.1 – 1.5: Comparable Models:

Appendix 1.1. Uruguay

Uruguay is the first country where recreational cannabis use was regulated. The actual legalization of cannabis took shape in 2011. A bill was presented to parliament, which garnered support from all political parties: possession of 25 grams of cannabis and the cultivation of eight plants per household would be permitted. Additionally, associations of consumers would have been legally recognized. During the deliberation of the bill, it became apparent that the planned self-sufficiency of consumers would only cover about 15% of market needs. Thus, various problems were not addressed beforehand (access to individuals with problematic consumption behaviour, poor-quality cannabis, discrimination against lower social classes, etc.) (Crick et al., 2013). A year later, the government took the initiative with the intention of legalizing and strictly regulating the cannabis market. This was part of a 15-point plan aimed at improving public safety in the country. The government model proposed a state monopoly on cannabis. However, the proposal faced heavy criticism as it did not address the crucial question of self-cultivation in Uruguay. Eventually, a new bill was presented to parliament in 2013, which linked both concerns: the self-cultivation of the plant and state control (Aguilar et al., 2014; Fiore & Pereira, 2021).

In Uruguay, individuals who have reached the age of 18 are allowed to possess up to 40 grams of cannabis, but consumption in public spaces is prohibited. There are three sources available for acquiring the substance: self-cultivation of plants, membership in an association of consumers that produces and distributes cannabis, and purchase of the substance from pharmacies. Regardless of the chosen source, each individual consumer must be registered with the State Institute for the Regulation and Control of Cannabis (IRCCA). This authority is responsible for market regulation and educating the population about the risks of cannabis consumption. The comprehensive registration of all market participants – including consumers – provides the government with a tool to control the quantities produced and sold. Additionally, the quantity of cannabis consumed by individual users is to be restricted (see following section). Furthermore, the registry of individuals serves to disseminate information about the risks of consumption and can also help identify individuals exhibiting problematic behaviour with the substance (Pardo, 2014; Fiore & Pereira, 2021; Obradovic, 2021).

Uruguayan authorities have set the maximum amount for the purchase of cannabis as follows: 40 grams per month or 10 grams per week. This individual limitation was then applied to the three sources of cannabis procurement: individuals growing plants themselves may not possess more than six specimens (per household); consumer associations must include 15 to 45 members and may possess a maximum of 99 plants; sales in pharmacies are limited to 10 grams per week. Sales to foreigners and advertising of cannabis are prohibited in Uruguay. The IRCCA is empowered to establish quality criteria for the cannabis sold in pharmacies, with a proposed THC content of 5 to 13%. The state also intends to set the price of cannabis, which should be close to the current black-market price at around \$1.20 per gram, with minor price differences based on the varying THC content of products. The government expects revenue from this regulation to finance awareness campaigns (Zobel & Marthaler, 2016; Fiore & Pereira, 2021; Obradovic, 2021).

In August 2014, the first individuals interested in self-cultivating cannabis plants were able to register. By early 2016, authorities counted 3,200 registered individuals. The number of approved consumer associations is difficult to determine. Recently, a newspaper article reported 15 functioning cannabis clubs, with another three having received approval and 12 in the approval process. For one of these associations, the membership fee is just under 360 Euros, with a monthly contribution of around 72 Euros. These costs suggest that the price of cannabis in the associations may be slightly higher than in pharmacies. Sales in pharmacies were expected to begin in the second half of 2016 (Zobel & Marthaler, 2016).

An estimate of total cannabis consumption can be made from the maximum amount of 40 grams per person per month. Based on the 3,200 self-cultivators and the approximately 20 cannabis clubs, a consumption of 2 tons per year can be calculated. Additionally, the 6 tons designated for sale through pharmacies are added. These quantities still fall well below the needs of the Uruguayan cannabis market, estimated by the government to be 22 tons. Therefore, an expansion of the legal market is expected (Zobel & Marthaler, 2016).

Appendix 1.2 United States of America

From a business perspective, the regulation in the United States of America (USA), more specifically in certain states of the USA that differ from each other, is highly interesting, although critics highlight that the regulation in US states focuses on business interests

over public health concern (Orenstein & Glantz, 2020). In November 2012, referendums about the legalization of recreational cannabis use in Washington State were approved by 56% and in Colorado by 55%. This paved the way for the world's first free cannabis markets. Although this is in complete contradiction to federal legislation, the federal administration has no interest in intervening in this state regulation (Zobel & Marthaler, 2016). However, the American Bar Association (2022) warns of legal issues for businesses considering cannabis-related businesses due to the query about legal competencies. For a detailed comparison between the legislature of Colorado and Washington State, as well as in relation to Uruguay, see Prado (2014).

In Colorado, the free sale of cannabis came into effect on January 1, 2014; the state of Washington followed suit on July 8 of the same year. A few months later, on November 4, 2014, voters in Alaska approved the legal regulation of cannabis by 52% and those in Oregon by 55%. The existing 300 dispensaries for medical cannabis in Oregon have been offering the substance for sale since October 2015. In Alaska, the first licenses were issued in the spring of 2016. The various cannabis regulation models of the US states show many similarities, but there are also several differences. However, all markets have in common that they are based on a profit-oriented approach. The regulation of the trade in alcoholic beverages serves as a model. However, the regulations for cannabis are tighter, as this substance is still prohibited at the federal level and internationally (Zobel & Marthaler, 2016).

Legal cannabis is accessible to individuals aged 21 and older. They may possess the substance and purchase it in specialized stores. There is a limit on the quantity, which can be up to one ounce (28.4 grams). So far, only Colorado has introduced restrictions for out-of-state buyers. Individuals from other states can purchase a maximum of a quarter ounce (7.1 grams) in Colorado. In the state of Washington, cannabis plants may only be grown for medical use; other states tolerate self-cultivation for personal consumption. The allowed quantity varies depending on the legislation, ranging from three to six plants per person (Zobel & Marthaler, 2016).

The cannabis market is divided into three main sectors: cultivation and production, processing and distribution, and sales. Anyone wishing to operate in any of these sectors requires a license. To obtain one, applicants must meet certain criteria and provide various guarantees. Annual license fees range from \$1,000 to \$10,000, depending on the state and the scope of the authorization. The number of licenses to be issued and whether an entity

can operate in different market sectors simultaneously vary from state to state. The strictest regulations are in the state of Washington, where there is a vertical separation that prohibits combining licenses in the two upper sectors (cultivation and production, processing and distribution) with a license in the sales sector. This restriction aims to prevent the emergence of overly powerful actors in the market. As a second measure, the state of Washington has restricted the number of retail outlets in the state. This is intended to ensure better control of trade, in contrast to Oregon and Colorado, where no such limitation exists (Zobel & Marthaler, 2016; Obradovic, 2021).

Specific regulatory authorities are responsible for approving, revoking, or renewing licenses. They are also responsible for regulating and overseeing the cannabis market. Local authorities in counties and municipalities can generally prohibit or restrict cannabis trade in their jurisdictions, both for medical and recreational products. Many of these authorities have already banned or heavily restricted the cannabis trade. However, in most major cities, there is usually no ban on the cannabis trade. In all states, there is a traceability system "from seed to consumer". With tracing, the entire production process is documented to prevent any products from flowing unnoticed into the black market. Control measures also include 24/7 video surveillance of production facilities, the use of security guards, and alarm systems. Actors in the legal cannabis market are required to employ these measures in their sector. Advertising of cannabis products is restricted in both Colorado and Washington state. However, the most detailed regulations have been established in Colorado so far. Alaska and Oregon are still working on the corresponding regulations (Zobel & Marthaler, 2016).

Taxes keep the price of cannabis products relatively high, which does have an impact on consumption behaviour. In the state of Washington, the highest taxes apply, amounting to approximately 50% of the untaxed product price. In Colorado, the markup on the untaxed price is 20 to 30%. Oregon temporarily imposes a tax of 25%, but in the medium term, this fee is expected to be set at around 20%. In Alaska, taxation is based on weight: a fee of \$50 per ounce has been set. This translates to \$1.75 per gram of cannabis. This amount is more in line with the practices of Colorado and Oregon than with those of the state of Washington. In any case, these taxes and license fees provide the states with the necessary financial resources for market regulation. Additionally, the new source of revenue offers funding for special expenses in the state budget. In the state of Washington, after deducting the costs of regulating the cannabis market, 55% of the surplus should be

allocated to healthcare, and 25% should be used for addiction prevention (Zobel & Marthaler, 2016; Obradovic, 2021).

In Colorado, this additional revenue for the tax year 2014-2015 amounted to around \$78 million. This amount does not include local taxes. For the period 2015-2016, tax revenue reached at least \$120 million. The state of Washington collected an additional \$80 million USD in 2014-2015. Currently, these revenues represent about 1% of the income of these states. The cannabis market is experiencing rapid growth. Additionally, employment figures suggest that the free sale of cannabis has already created tens of thousands of new jobs. At the beginning of 2016, the state of Colorado had issued 424 licences in sales, 541 for cultivation and production and 168 for processing and distribution. Only 238 licenses were issued for free sale in Washington State, about half compared to Colorado. This is due to the stricter regulations in Washington State. However, Washington has set a maximum limit of 556 retail outlets. In Colorado, sales of freely available cannabis amounted to \$588 million in 2015, practically doubling from the previous year (\$313 million). In the state of Washington, cannabis product sales totalled \$260 million in the inaugural year of liberalization (from July 2014). These increases are a result of newly established retail outlets and increased cannabis production. Undoubtedly, both domestic and external demand (tourists and cross-border travellers) have increased as well (Zobel & Marthaler, 2016; Obradovic, 2021).

Further, there are various cannabis products that create a market. In Colorado, in 2015, 40 to 50 tons of smokable cannabis flowers (2014: 17.5 tons), 5 million units of cannabis-infused edibles (2014: 2.85 million), 700,000 units of non-edible cannabis products such as e-liquids and oils (2014: 359,000). Hence, cannabis products for consumption or inhalation already form a significant market segment, i.e. in Colorado, edibles are estimated to account for 30% of the market. This expansion of the product range offers various advantages for the cannabis industry. The raw material can be used more effectively. The customer base can be expanded, i.e. non-smokers can also be targeted with alternative products, and certain prohibitions can be circumvented by the new products (Zobel & Marthaler, 2016; Obradovic, 2021).

If the legal trade is combined with the revenue from sales for medical use in regulated markets, a total volume emerges that seems capable of capturing the majority of the market from the black market. Following Light et al. (2014), before the regulation of free cannabis sales, 130 tons of cannabis were consumed in Colorado alone. In 2015, 100 tons

of cannabis were sold as smokable products in the two regulated markets. This is accompanied by millions of units of alternative cannabis products. Although demand has been increasing since 2013, it is reasonable to assume, for good reasons, that the bulk of the cannabis market is now covered by legal trade.

The prices for freely available cannabis, at \$10 to \$12 USD per gram, are still above the black-market price. After liberalization, costs initially decreased, but they have since stabilized at a certain level. Apparently, production costs are quite high due to regulatory requirements (taxes, licensing fees, surveillance measures, training, etc.). For this reason, legally produced cannabis may not be able to be offered at low prices, even though cannabis can be produced very inexpensively. It is estimated that the production cost is comparable to that of a tea bag (Kleiman, 2015).

Appendix 1.3 Netherlands

With the Narcotics Act (Opium Act) of 1976, the cultivation of five cannabis plants and possession of 30 grams of cannabis were no longer considered criminal offences but rather misdemeanours punishable by a fine. However, further legalization of cannabis did not occur out of consideration for existing international agreements. Nevertheless, in 1979, the Netherlands opted to apply the principle of opportunity, which allowed prosecutors to completely refrain from prosecuting the mentioned offences. This de facto legalized the possession and sale of small quantities of cannabis (Trautmann, 2014). This practice continues to this day. This model of tolerance was evidently aimed at a specific group of people, namely cannabis sellers operating in certain youth centres (Grund et al., 2013). Their presence ensured that criminal groups, also selling other drugs, were kept away from these centres. Another trading model emerged with the establishment of coffee shops in the 1970s and 1980s. Although it did not receive universal approval from authorities, the judiciary confirmed the compatibility of coffee shops with existing law (Trautmann, 2014).

In the early 1990s, there were about 1,500 coffee shops in the Netherlands. This proliferation prompted authorities to act. Amsterdam was the first city to introduce a licensing requirement for coffee shops, which was linked to five conditions. These provisions remain valid to this day: no advertising, no hard drugs, no disturbance of public order, no sales to minors and only small quantities are allowed. These criteria were

extended to the entire Netherlands in 1994. Any person who has reached the age of 18 in the Netherlands may possess up to five grams of cannabis. This amount is also considered the maximum limit per transaction in coffee shops. The consumption of cannabis in public spaces can be tolerated with some exceptions (e.g., in children's playgrounds) (Prado, 2014; Zobel & Marthaler, 2016).

As of the end of March 2015, there were 582 coffee shops in the Netherlands. They were located in 103 out of a total of 505 Dutch municipalities. Amsterdam has the highest concentration of coffee shops, with an estimated 200. For many years, the number of shops has been decreasing. However, this trend could be offset by the increasing size of the remaining shops. Estimates of the volume of the Dutch cannabis market vary widely. Based on consumption data in the general population, the quantity usually ranges from 50 to 100 tons. Estimates assume a consumption of 52 and a nationwide sales volume of 139 tons of cannabis flowers and 26 tons of resin (Trautmann et al., 2014). Furthermore, it is estimated that 55 to 70% of the total Dutch cannabis trade is conducted through coffee shops. This would result in a total volume of 235 to 300 tons. However, nobody knows what proportion is consumed domestically and how much flows through foreign buyers (Zobel & Marthaler, 2016).

Appendix 1.4 Canada

Canada was the second country in the world to make recreational cannabis legal and control its use. It is a big deal because Canada is a wealthy and influential country. This move goes against the usual rules about drugs worldwide. Many researchers and big companies are curious about this change. Canada is welcoming cannabis businesses, and investors from around the world are eager to get involved in this new opportunity (Cunningham, 2021). In 2019, Canada had 400 physical stores selling cannabis, making around \$908 million in sales. On average, people were about 34 kilometres away from a cannabis store. By 2020, the sales in Canada's cannabis market doubled to \$2.6 billion. This growth happened because more people were buying cannabis online due to the pandemic, and the market was becoming more established (Hasse, 2021).

The Cannabis Legalization Task Force, led by Canada's liberal party, finished its report in about six months. In April 2017, the Federal Government said they wanted to legalize cannabis by July 2018. The Task Force helped set the main goals for the government:

public health, getting rid of the illegal market, and keeping people safe. Recreational cannabis and related products were legalized in 2018 and 2019 in several steps (Cunningham, 2021). Almost all provincial and territorial governments, except Manitoba, agreed to the Coordinated Cannabis Taxation Agreements (CCTA), which sets a limit on how much tax can be charged on cannabis. The national government sorted out the tax rules before legalizing recreational cannabis. Under these rules, 75% of the tax money goes to provincial or territorial governments, and 25% goes to the federal government. License holders also have to pay a regulatory fee to the federal government, which is either 2.3% of their yearly revenue or \$23,000 CAD, whichever is higher. For micro-class license holders, the fee is 1% of their yearly revenue or \$2500 CAD (Cunningham, 2021).

In Canada, unlike the United States but similar to Uruguay, recreational cannabis is legal across the entire country. This means that the responsibility for enforcing, regulating, and implementing the laws falls on all three levels of government: federal, provincial (or territorial), and municipal. The national government has the authority to set goals and standards, which prevents provinces from creating laws that give them an unfair advantage. However, it's important to note that privately owned retail stores in some provinces might still provide some advantages. The federal government controls the licensing and regulation of cannabis cultivation, processing, and production, while the provinces and municipalities handle licensing and regulations related to distribution, sale, and consumption (Train & Snow, 2019).

In Canada, the cannabis distribution system combines aspects from both the United States and Uruguay. There are government-operated retail stores, similar to Uruguay, as well as privately run stores. Online sales and delivery, available nationwide, are unique to Canada. Canadian cannabis businesses have banking access and can trade between provinces, unlike in the United States. Most provinces have a mix of government and private retail stores, but some, like Quebec and Prince Edward Island, only have government stores. Home cultivation of cannabis is allowed in most provinces, typically up to four plants per household, except in Quebec and Manitoba, where it's prohibited. Most provinces control wholesale distribution except for Saskatchewan. The possession limit in public is usually 30 grams, similar to the United States, and some provinces allow cannabis lounges or limited public use. Saskatchewan and Quebec have additional restrictions on home cultivation (Lancione et al., 2020). In Ontario, companies are now limited to holding only one license at a time, aiming to involve more companies in the

cannabis industry. This strategy resembles actions taken in some U.S. states to prevent early monopolies and prohibit vertical integration. Additionally, all cannabis companies must use the National Cannabis Tracking System (Cunningham, 2021).

Appendix 1.5 Spain

Following a decision of the highest court, the sole ownership and consumption of drugs are not a criminal offence as long there is no trade (Crick et al., 2013). With the association Kalamudia in the Basque Country, for the first time and after legal battles, cannabis was grown and distributed legally within the framework of a consumer association. This model was later named Cannabis Social Club (CSC) and subsequently spread throughout the entire territory of Spain. In 1996, the first federation of cannabis clubs was founded (Arana et al., 2011).

For a long time, the CSC (Cannabis Social Club) movement led to a shadowy existence. The clubs thrived mainly in the Basque Country and Catalonia, where in 2009, only 14 cannabis clubs were active. But there, the phenomenon was about to rapidly develop. By 2014, Catalonia already counted 400 of these organizations, with 250 of them emerging in Barcelona. The model, developed by a few activists, was soon adopted by other circles that saw it as an economic opportunity. New clubs emerged with significantly higher membership numbers and a corresponding increase in cannabis sales. Certain organizations offered their services to all consumers, including tourists. The rapid proliferation of cannabis clubs with different rules prompted authorities in various autonomous communities and municipalities to draft regulations for CSCs. In contrast, the Spanish state increasingly worked towards the closure of these associations. In 2013, the Office of the Chief Prosecutor even issued an order declaring CSCs as potential criminal organizations. This heightened the deterrent effect on club members (Murkin, 2015).

A study commissioned by the Andalusian government and published in 2001 was the first to outline the conditions under which cannabis can be produced and distributed without violating the law or jurisprudence: Clubs may only admit adults who already consume cannabis. Furthermore, no profit may arise from the production and distribution of cannabis. Finally, it must be ensured that the products are consumed exclusively by club

members. Based on this, the Spanish Federation of Cannabis Organizations (FAC) formulated more precise rules (Zobel & Marthaler, 2016).

Today, CSCs are considered non-profit private associations. Access should only be granted to adult members who already consume cannabis. The clubs must be registered in a national register and disclose their purpose, namely the production and distribution of cannabis to members and the reduction of associated risks. The selling price of cannabis to members includes production and administrative costs and should be below the black-market price. Additionally, CSCs are subject to taxation and may also be required to pay value-added tax, although the volume of these taxes is unknown. To join a CSC, individuals must declare themselves as cannabis consumers or provide a prescription for medical use. Sometimes, a recommendation from a club member may also be necessary. The minimum age is 18 (legal age), sometimes even 21. Legal residency may be another criterion for club membership. The quantity of cannabis that individuals are allowed to obtain is predetermined and usually limited to a maximum of 2 to 3 grams per day. Consumption often takes place on-site to ensure that the substance is not resold. During admission to the CSC, candidates with problematic consumption behaviour should be identified so that club officials can take preventive or harm-reducing measures if necessary. The amount of cannabis consumed by each member is recorded. The total production of a CSC must be based on the estimated needs of its members, with an additional reserve allowed. The cultivation of cannabis plants can be carried out either by members of the association or entrusted to farmers. In any case, all phases of production must be documented. Ideally, inspections should take place by authorities (Pares Franquero & Bouso Saiz, 2015).

With the rapid spread of CSCs, some regional administrations have developed criteria for the operation of these clubs. However, these requirements may not address the cultivation or transportation of cannabis, as these aspects are regulated in national legislation on narcotics. The Parliament of Catalonia approved guidelines on public health in early 2015, empowering municipalities to allow the operation of CSCs within their jurisdiction. These regulations include requirements such as the training of CSC officials, early detection of members with problematic consumption behaviour, prohibition of alcohol and other drugs, compliance with tobacco laws, maintaining a minimum distance from schools and health facilities, adherence to operating hours (maximum 8 hours per day) and closing times (10 p.m. on weekdays, midnight on weekends), prohibition of advertising,

compliance with hygiene and environmental protection regulations. Additionally, new club members must observe a waiting period of 15 days between applying for membership and receiving cannabis for the first time (Pares Franquero & Bouso Saiz, 2015).

There are no official figures on the number of CSCs in Spain. The latest estimate suggests there are 500 to 600 clubs. Most of them are located in Catalonia (about 350) and the Basque Country (about 75). The remaining CSCs are spread across various autonomous communities. It is estimated that there are 165,000 members in Barcelona alone, distributed among the city's 150 to 200 CSCs. In Catalonia, there are said to be 20 clubs with more than 1,000 members, two of which have over 10,000 members. Some CSCs have formed associations (Zobel & Marthaler, 2016). Zobel and Marthaler (2016, p. 25) estimate the total volume as such: "Assuming the approximately 500 existing CSCs each have an average of 500 members, that would total 250,000 individuals. If each of these individuals consumes 30 grams per month (360 grams per year), the total volume of cannabis consumed per year would be 90 metric tons".

Appendix 6:

Cannabis Expert Interview Questions

1. How will the recreational market differ from the medical market, especially with regard to products (requirements or preferences, prices, quality, etc.)?
2. How does the regulatory environment affect the recreational cannabis industry (social clubs, pilot projects)?
3. What will the competitive landscape look like in the German cannabis market, and which strategies are expected to be more successful in gaining a competitive edge?
Cost-leadership or differentiation (special products, extracts, edibles, etc.)?
4. Is it an advantage to control the value chain from cultivation to distribution, or should companies rather specialize? -> What role will quality and sustainability play in the cannabis business?
5. Which marketing and sales strategies do you think are most effective in the recreational cannabis market and why? How important is branding in the cannabis market, and what are the key elements of a successful cannabis brand?
6. Will the black market be a competitor, and if so, why?

7. How do you see the future of the cannabis market in Germany, and what do you think will be the next major developments, trends, and innovations in the industry?
8. In your opinion, what are the most important factors for the success of companies entering the emerging market for recreational cannabis in Germany? What hurdles and challenges do you see?
9. Have I neglected something important? Anything else that needs to be mentioned?

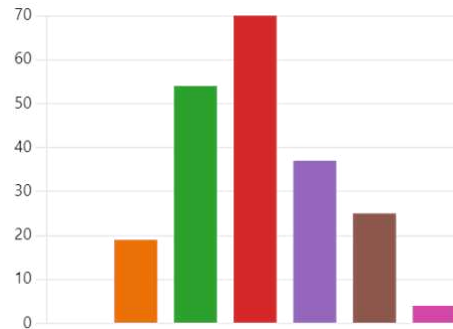
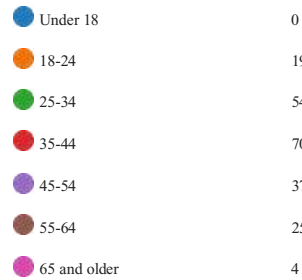
<p>IP1- Head of Sales Cantourage</p>	<p>The discussion primarily revolves around the differences between the recreational and medical cannabis markets in Germany, focusing on the impact of the regulatory environment, product differentiation, and marketing strategies. The speakers also explore the complexities of regulations, market positioning, branding, and the competitive landscape in the industry, providing insights into the challenges and opportunities for companies entering the emerging market for recreational cannabis. Alongside these topics, they touch upon the potential future developments in the cannabis market, such as the legalization debate and the implications for product offerings and prescriptions. This includes an in-depth analysis of the evolving landscape of regulations, market dynamics, and strategic positioning in the industry. Further topics discussed include the significance of innovation and the potential impact of regional disparities in cannabis production. The conversation offers a glimpse into the challenges and strategies that companies may face in this evolving sector.</p>
<p>IP2 – CEO of German Cannabis Start-Up</p>	<p>The discussion revolves around the differences between the recreational and medical cannabis markets, particularly focusing on the potential products, requirements, preferences, prices, and quality. The speakers also cover the regulatory environment and its impact on the recreational cannabis industry, the potential strategies for success in the</p>

	<p>market, and future developments and trends in the cannabis industry in Germany.</p> <p>The context revolves around the evolving landscape of the cannabis industry in Germany, with a focus on the potential challenges, regulations, market dynamics, and potential strategies for success in the recreational cannabis market. The discussion provides insights into the potential future developments and trends in the cannabis industry in Germany.</p> <p>Cannabis Market (Recreational vs. Medical), Regulatory Environment, Market Entry Hurdles and Challenges, Potential Strategies for Success, Innovation and Future Trends</p>
<p>IP3 – Lawyer, Legal Council of leading German Cannabis Brand</p>	<p>The conversation centers around the differentiation between recreational and medical cannabis markets in Germany, highlighting the influence of regulatory environments, product quality, marketing strategies, and future market developments. The speakers discuss how medical cannabis adheres to higher quality standards due to stringent legal requirements, leading to higher prices, whereas recreational cannabis might offer lower-quality options at more consumer-friendly prices. They also touch on various business strategies that could be effective in this emerging market, such as brand building and competitive positioning, focusing on the potential for brand loyalty and innovative product offerings to play significant roles. Additionally, regulatory impacts and the evolving legal landscape are examined, emphasizing the positive changes in Germany that could enhance market opportunities while also addressing the challenges posed by the current regulatory framework and its effect on the market dynamics and competitive landscape.</p>

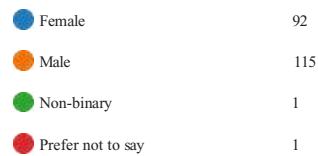
Appendix 7:
Quantitative Survey Data:
 Survey: Recreational Cannabis in Germany

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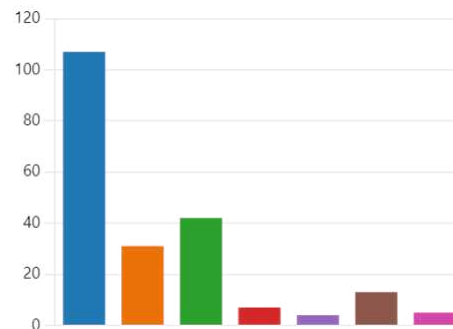
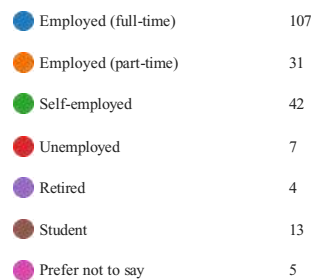
1. How old are you?



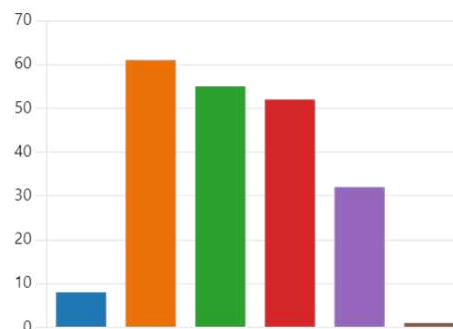
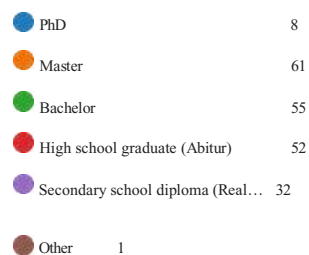
2. What is your gender?



3. What is your occupation?

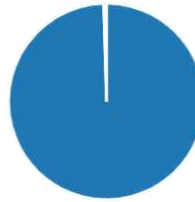


4. What is your highest level of education?



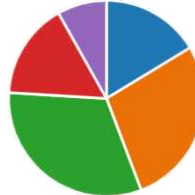
5. In which region do you live?

Germany	208
Austria	1
Switzerland	0
Other	0



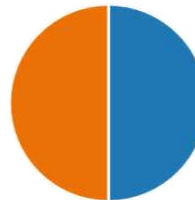
6. What is your stance on the legalization of cannabis in Germany?

Strongly in favor	34
In favor	58
Neutral	66
Against	33
Strongly against	17



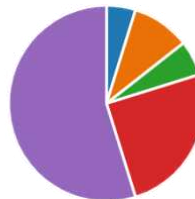
7. Have you ever used cannabis?

Yes	104
No	104



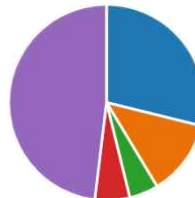
8. If yes, how often do you consume cannabis?

Daily	5
Weekly	10
Monthly	6
Seasonal	26
Yearly	57



9. How much do you typically spend on cannabis per month?

Less than €20	30
€20 to €50	13
€51 to €100	5
More than €100	6
I don't purchase cannabis	50



10. Do you use medical cannabis with a prescription?

Yes	7
No	97



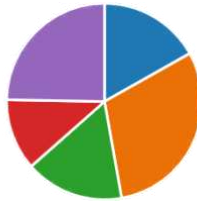
11. Would you be willing to try cannabis since it became legal?

● Yes, I would try it.	72
● No, I would not be interested.	79
● Maybe, depends on the circums...	57



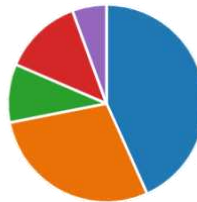
12. If obtaining a prescription for medical cannabis were made easier, how likely would you be to seek a prescription?

● Very likely	30
● Somewhat likely	54
● Neither likely nor unlikely	29
● Somewhat unlikely	21
● Very unlikely	44



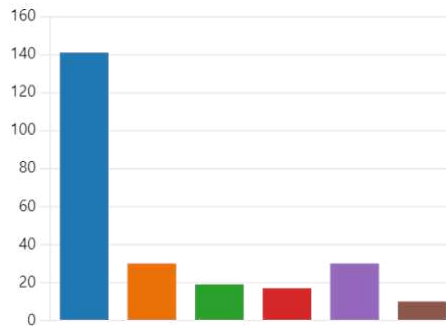
13. What would be / is your preferred method of consuming cannabis?

● Smoking (joints, blunts, pipes,...)	77
● Edibles (cookies, gummies, chocolate)	51
● Vaping	17
● Oils (tinctures, drops)	23
● other	10



14. What would be the most important to you when purchasing cannabis?

● Quality	141
● Accessibility	30
● Variety of strains	19
● Brand image	17
● Potency (THC level)	30
● Sonstiges	10



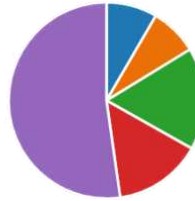
15. Please select 'Agree' for this question to show that you are paying attention.

● Strongly agree	0
● Agree	174
● Neutral	3
● Disagree	1
● Strongly disagree	0



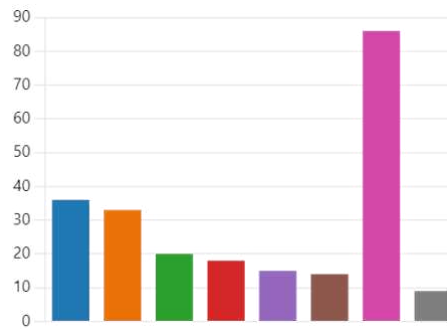
16. How likely are you to continue purchasing cannabis illegally?

● Very likely	15
● Somewhat likely	14
● Neither likely nor unlikely	30
● Somewhat unlikely	26
● Very unlikely	93



17. What would be your main motivation to continue buying cannabis illegally if it were legalized?

● Lower prices	36
● Better quality	33
● More convenient access	20
● Trust in current supplier	18
● Avoidance of taxes or regulations	15
● Habit or preference	14
● No motivation to buy illegally	86
● Sonstiges	9



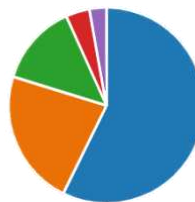
18. How would taxes and strict regulations on legal cannabis affect your decision to buy it?

● I would be less likely to buy legal cannabis if taxes and regulations increase the price significantly.	38
● Taxes and regulations would not affect my decision to buy legal cannabis.	71
● I am unsure how taxes and regulations would affect my decision.	69



19. How important is quality assurance and safety testing for you when purchasing cannabis?

● Extremely important	102
● Somewhat important	40
● Neutral	24
● Somewhat not important	7
● Extremely not important	5



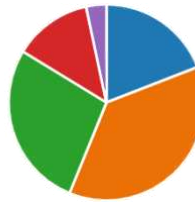
20. Would you be interested in joining a cannabis social club where you can purchase cannabis legally?

● Yes	31
● No	79
● Maybe	68



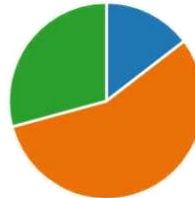
21. How much would you be willing to pay for a gram of legal cannabis?

Less than €5	34
€5 to €10	66
€10 to €15	49
€15 to €20	23
More than €20	6



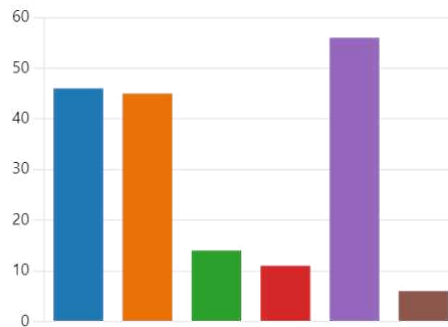
22. Now that growing cannabis is legal, are you interested in cultivating your own cannabis?

Yes	26
No	100
Maybe	52



23. What would be your preferred method of purchasing legal cannabis if all would be available?

Dispensaries (physical stores)	46
Online shops	45
Delivery services	14
Social clubs	11
Pharmacy	56
Sonstiges	6



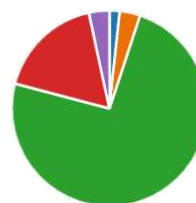
24. How familiar are you with existing cannabis brands?

Not familiar at all	122
Slightly familiar	22
Moderately familiar	20
Extremely familiar	13



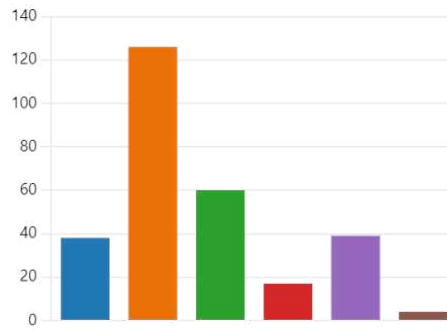
25. How do you perceive the quality of the brands you are familiar with?

Very low quality	3
Low quality	6
Neutral	131
High quality	31
Very high quality	6



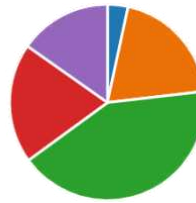
26. In what ways do you think a cannabis brand can distinguish itself from competitors?

● Unique product offerings	38
● Superior quality	126
● Better customer service	60
● Engaging marketing campaigns	17
● Social responsibility initiatives	39
● Sonstiges	4



27. How much would the brand influence your decision when purchasing cannabis products?

● Decisively	6
● Significantly	35
● Moderately	74
● A little	35
● Not at all	27



28. Would you prefer to purchase cannabis from a big international brand (like Tilray, Aurora, Cookies) or a local firm?

● I prefer a big international brand.	19
● I prefer a local firm.	58
● No preference; I focus on product quality and price regardless of the brand's origin.	100

