

MASTER'S DEGREE FINAL PROJECT



UCAM

UNIVERSIDAD CATÓLICA
DE MURCIA

FACULTY

Master's degree

Marketing Plan AI-Powered Toothbrush

“AI Care”

Author:

Ximano Fredericks,

Mostafa Hefny

Supervisor:

Dra. Juana María Padilla Piernas

Murcia, June 2023



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INTRODUCTION

The development of artificial intelligence (AI) technology is constantly advancing. The AI sector is expected to experience significant growth over the next decade, with the market value estimated to be around US dollars 100 billion in 2023 and increasing twenty-fold to almost US dollars 2 trillion by 2030. (Next Move Strategy Consulting, 2023: as cited by Thormundsson, 2023)

AI is a new growing trend in the market, many companies have invested greatly in the advancement of many different products that incorporates the use of AI technology. Seeking to take advantage of this growing trend, the use of AI technology in toothbrushes would offer a unique and exciting approach to oral hygiene for people of all ages, improving brushing technique and providing valuable data for individuals, dentists, and health professionals.

Dental professionals, year after year, have found it difficult to make accurate and consistent detection of oral diseases, or problem areas, of patients. However, with the use of AI technology and complex data analysis algorithms, it could lead to a faster and more accurate diagnoses. It could also give users the abilities to track these abnormalities themselves, giving the users an opportunity to save money and time by not having to plan numerous check-ups within a year with their dental practitioner. (Planet DDS, 2023)

This Final Master Thesis aims to develop a marketing plan for a new toothbrush that incorporates advanced AI technology. The toothbrush is designed for both children and adults and aims to revolutionize the oral care market by offering a unique, innovative, and personalized brushing experience.

This project hopes to analyze the market trends and consumer behavior in the oral health care industry within Ireland, as well as also identifying the preferred target segments for an AI-powered toothbrush. This project also seeks to educate the readers of the many factors that should be taken into consideration, in order to formulate effective marketing strategies within the oral health sector in Ireland.

This study will conclude that the implementation of AI technology in toothbrushes has significant potential to improve the users overall oral health. However, there

are challenges in terms of cost and market acceptance that need to be addressed.

JUSTIFICATION

The development of an adequate marketing plan for the AI toothbrush holds significant importance in the current market landscape. Several factors contribute to the justification of this thesis, highlighting the need for a comprehensive marketing strategy for the AI toothbrush:

- 1- Innovative AI Technology: The AI toothbrush represents a ground breaking innovation by integrating AI technology into a commonly used oral care product. This unique concept provides real-time feedback, personalized recommendations, and early detection of oral diseases. Given the increasing demand for smart and connected devices, it is crucial to develop an effective marketing plan to showcase the benefits and distinctiveness of this advanced toothbrush.
- 2- Growing Oral Health Concerns: Oral health has gained significant attention in recent years, with individuals increasingly conscious of the impact of oral hygiene on overall well-being. The AI toothbrush addresses these concerns by offering monitoring capabilities, tailored brushing techniques, and early detection of oral diseases. A well-designed marketing plan can educate consumers about the importance of oral health and position the AI toothbrush as a solution to their oral care needs.
- 3- Market Trends and Consumer Behaviour: Analysing market trends and consumer behaviour is essential to understand the target audience's preferences, needs, and purchasing habits. By conducting a thorough analysis of the oral health care industry, including demographic and psychographic segmentation, this thesis aims to identify the preferred target segments for the AI toothbrush. This knowledge will enable the development of tailored marketing strategies to effectively reach and engage the intended audiences.

OBJECTIVES OF THE STUDY

Main Objective:

The main objective of this Master's thesis is to develop a comprehensively marketing plan and study the viability of this project. The marketing plan aims to position the AI Care as a leading brand in the oral care industry by addressing market trends, consumer behaviour, and key factors affecting business operations within Ireland. The plan will encompass analysis, strategy development, and the implementation of effective marketing actions for a new AI toothbrush manufactured by AI Care.

Specific Objectives:

1- Conduct Adequate Analysis:

As part of the study, a thorough analysis will be conducted to gather the information needed to develop a successful marketing campaign. A market analysis, consumer behaviour in the oral health care industry, and segment identification will be included in this analysis.

2- Study of the Context and External Analysis:

It is crucial to examine the external environment and the sector closely related to AI Care. This includes conducting a study of the contextual factors such as political, economic, social, technological, environmental, and legal aspects (PESTEL analysis). Additionally, an external analysis will be conducted to identify opportunities and threats in the market.

3- Conduct thorough Internal Analysis:

The study will analyze and develop a thorough internal analysis of the company to determine its strengths and weaknesses and analyze how these can further help the company explore future opportunities and help combat future possible threats. This analysis will focus on the company's resources, capabilities, and competitive advantages.

4- Propose Marketing Actions:

Due to the analysis conducted, the study will create effective marketing strategies for the promotion and marketing of an AI-powered toothbrush. These action plan should align with the company's main objectives, as well as help to highlight the company's vision.

METHODOLOGY

This project mainly incorporates a few qualitative research methods to examine and analyse the current oral care market to then draw conclusions and provide a better overview on the potential market itself.

The first of these methods is literature review. In order to conduct successful research, an in-depth literature review has been carried out to obtain valuable information on current market trends and consumer behaviours. The literature review will serve as the basis of the project, by providing the conductors as well as the readers a vast amount of information taken from multiple different credible sources in order to help identify the preferred target segmentation and provide the company with a unique selling point for the AI-powered toothbrush.

The next research method utilized within this paper is data analysis. Data analysis is required to analyse the current market trends as well as help develop a strong PESTEL analysis and Porter's Five Forces analysis. Data for this study was collected through a combination of secondary market research and consumer surveys and provide tables, graphs and charts to better illustrate all the information collected. Data analysis is very crucial in observing the past trends and help forecast future projections.

This paper will also analyse the market's biggest competitors. This will help the company to have a better understanding of their products, marketing strategies and their competitive advantages. This would be crucial for the company to identify their unique selling point and how they can differentiate from their competitors, as well as provide an insight on how to formulate an efficient marketing plan.

In short, the selection of these methods of collecting data is vital for the completion of this paper, and seeks to formulate an effective and efficient marketing plan for the success of the company's growth. These methods would offer valuable information to draw conclusions and make adequate forecasts that would be essential for the market exposure of this new innovative startup. This

information would also give the readers a vast amount of information to better understand the market and how the product would perform within this market.

1. ANALYSIS OF THE MACRO ENVIRONMENT

1.1. PESTEL ANALYSIS

1.1.1. Political

The 'Emerald Isle', Ireland, is the second-largest island nation located in Europe with a total land area of 68,890km². The island is occupied by two nations, of which, according to National Geographic Kids, "The Republic of Ireland occupies 80 percent of this landmass, while a large chunk of land in the north is part of the United Kingdom (Northern Ireland)." (National Geographics Kids, n.d.) With a population of 5 million people as of 2023 it is ranked 124 of the most populated country and the median age of 38.2 years. (Worldometer, 2019)

The Republic of Ireland is a parliamentary democracy, proclaimed in 1937, with the president being the head of state, also known as 'uachtarán', which selected democratically by the general public to serve a maximum of two terms (one term being seven years). (Fanning & John O'Beirne Ranelagh, 2019)

With Britain's exit (BREXIT) from the European Union, there comes great challenges within the Island of Ireland, as the Republic of Ireland is a part of the European Union and Northern Ireland being a part of Great Britain. Due to "Protocol/Windsor Framework", formally adopted in March, 2023, guarantees, there would not be any physical boards implemented between the nations. However, goods and products that are being shipped to the Irish republic, and enters Northern Ireland, are subject to insensitive security checks, unless it is a pre-registered "trusted trader". (European Commission, n.d.) These border controls may have an impact on Ireland's economy on a whole.

Political stability and government policies on innovation and technology in Ireland can impact the investment and development of the product. The government's support for research and development in the field of AI technology can facilitate the development of advanced features and improve the toothbrush's performance. Furthermore, tax incentives and subsidies for companies investing in innovative products can reduce production costs and increase profitability, especially in Ireland.

1.1.2. Economic

Ireland is a developed European Union (EU) country with a GDP of 504.18 billion USD in 2021, which ranks it among the top 25 countries in terms of GDP. The GDP per capita in the same year was 100,172 per capita, and this makes the EU country the 3rd ranked “richest” country, behind Luxemburg and Singapore. In 2021 average inflation rate within the EU was estimated to be 2.55%, whereas Ireland boasted a slightly lower inflation rate of 2.36% in comparison. (WorldData.info, 2023) Unemployment have been on the decline in the last 10 years, as shown in Figure 1. below, it has reached a low of 1.30% in the last quarter of 2022. (Carvalho, 2019)

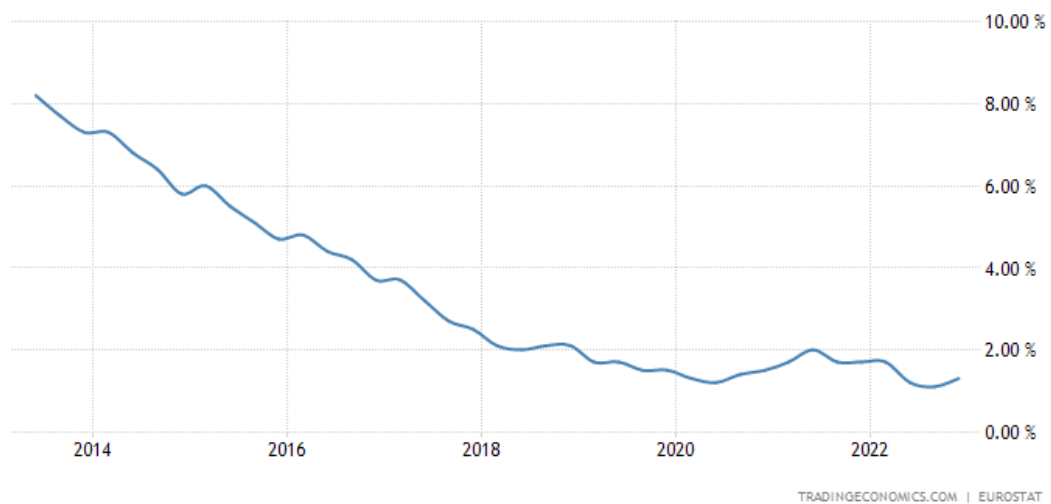


Figure 1. Unemployment rate in Ireland for the past 10 years (Source: Trending Economics)

Ireland is home to over 1,000 multinational companies, and still continues to attract a large amount of Foreign Direct Investment (FDI). It currently stands as the second most enticing country for FDI, behind Singapore. Not only is Ireland home to a large number of multinational companies, Ireland has a large number of Irish companies, of which Ireland is the largest exporter of beef to Europe and among the 4th largest in the world, because of its natural competitive advantage. Also 50% of the medical technology companies within Ireland are local Irish companies. (Catherine, n.d.)

LOCATED IN IRELAND

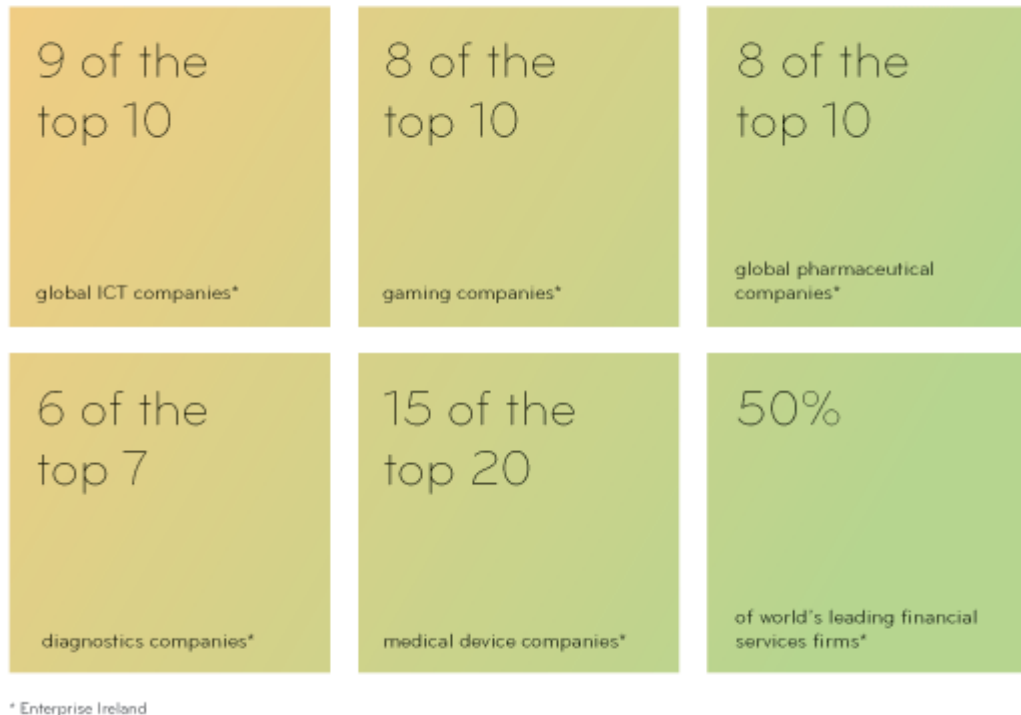


Figure 2. FDI within Ireland (Source: Education in Ireland)

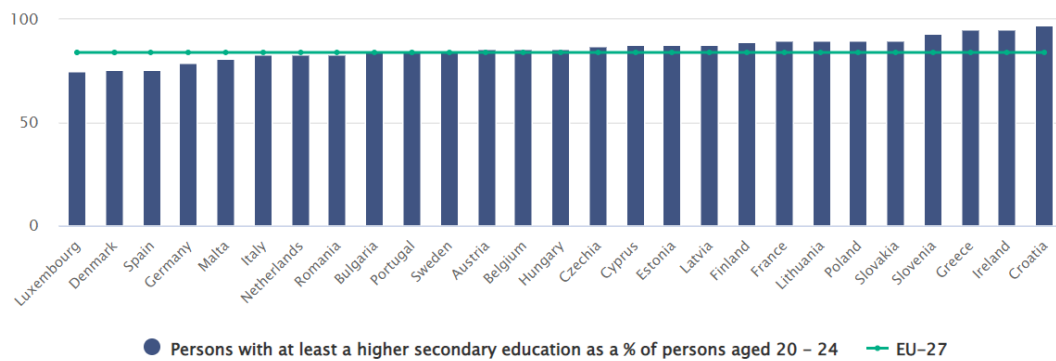
Economic conditions in Ireland can impact the pricing strategy and affordability of the product. For example, during an economic downturn, consumers may be more price-sensitive, which could lead to a lower price for the product. In contrast, during periods of economic growth, consumers may be willing to pay more for innovative and advanced products like the AI toothbrush, and the toothbrush's high price may not be a significant barrier to adoption.

Consumer purchasing power and disposable income in both markets can influence demand for the product. If the product is targeted towards a high-income segment, changes in the economy that affect disposable income can impact sales. Conversely, if the product is priced competitively, it may attract a wider range of consumers in both markets.

1.1.3. Social

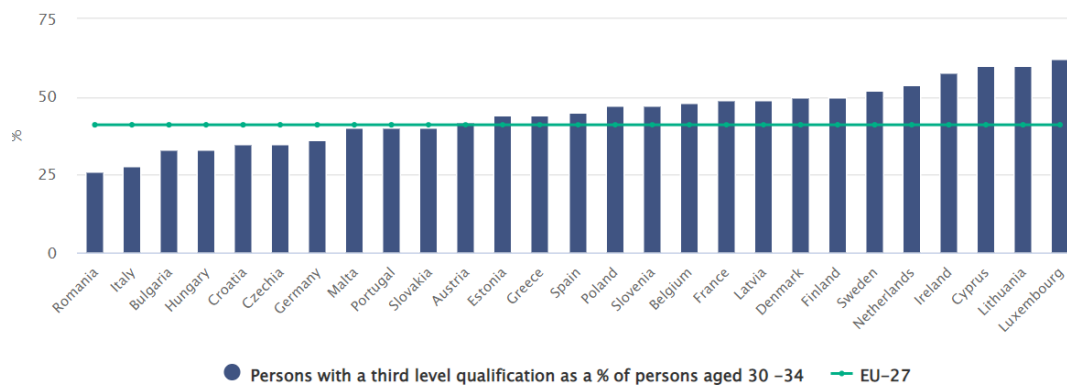
Within the EU, Ireland placed second, in 2020 reports, in terms of individuals between 20-24 years of age with at least a high school education. 95% of people aged 20-24 has obtained a high school education, same as

Greece, putting them tied for second place within the EU, right behind Croatia. For individuals aged 30-34, 58% have obtained a third level qualification, well above the EU's average of 41%. Ireland also boasts a low dropout rate of only 5% of students aged 18-24 years of age. This is to emphasize the young and talented human capital the Republic of Ireland has to offer. (Central Statistics Office, 2023)



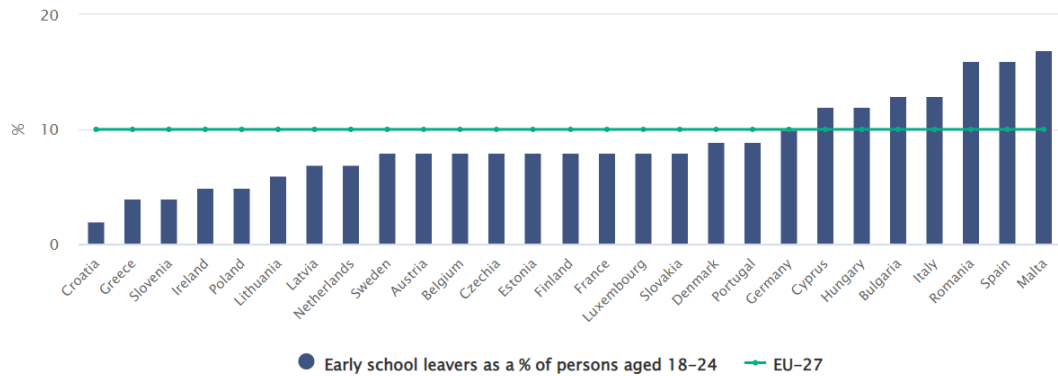
Source: Eurostat Highcharts.com

Figure 3. Persons with at least a secondary school education as a percentage aged 20-24. Source: Eurostat



Source: Eurostat Highcharts.com

Figure 4. Persons with a tertiary level education as a percentage aged 30-34. Source: Eurostat



Source: Eurostat
Highcharts.com

Figure 5. Dropout rate as a percentage of persons aged 18-24. Source: Eurostat

Oral diseases are much more noticeable in older adults, and they also suffer from higher levels of tooth loss. With the aging population, which increased 36% since 2012 of individuals 65 years and above. According to the 'Dental Health Foundation Ireland', the aging population is set to double in the 20 years. (Ireland Department of Health, 2022)

Changing social trends and attitudes towards oral hygiene in Ireland can impact the market for the AI toothbrush. For instance, there has been a growing interest in natural and organic products in both markets, which could affect demand for traditional toothbrushes and toothpaste. Additionally, increased awareness of the importance of oral hygiene and its links to overall health could create a larger market for the AI toothbrush. With 50% of 5-year-olds and 80% of 12-year-olds experienced dental decay, back in 1984, and as of 2014 these numbers have thus been reduced to about 30% and 40% respectively. (DOHI, 2019 as cited by Donovan, Sheehan, and O'Sullivan (2021)) With the passing of the relatively new oral health policy, 'Smile Agus Sláinte' in March 2019, which helps to support the population to improve their oral health by providing a variety of packages that's aimed at different age groups offering free checkups and other oral care assistance. (Ireland Department of Health, 2022)

1.1.4. Technological



Figure 6. The evolution of Tech in Ireland. Source: ICT Skillnet

Ireland has achieved a lot when it comes to technological advances, it has been considered a key European tech leader and has also become one of the most important hubs that fosters innovation within the continent of Europe. Ireland has come a long way, moving from an agricultural base economy to becoming among the leaders of Europe in terms of technological innovations. Dublin being home to a number of large multinational tech companies, such as Apple, Facebook, Amazon and Google to name a few. (ICTSkillnet, 2022)

Technological advancements in AI can lead to new features and improved performance, while competition from other companies offering AI-powered toothbrushes can also affect the product's market position. The development and availability of advanced AI technology in Ireland can impact the product features and competitive advantage

The accessibility and adoption of digital platforms and e-commerce in both markets can affect the distribution strategy and marketing channels. The

toothbrush could be sold online or in physical stores, and marketing strategies could include social media and other digital platforms. Accessibility to these platforms and the level of digital literacy among consumers could affect the effectiveness of these strategies.

1.1.5. Environmental

Ireland, like every other country, is vulnerable to climate change, as well as rising sea levels. Air pollution is also a major environmental risk, which accounted for 1,300 premature deaths in 2017 in Ireland, of which the heating of fossil fuel for home heating is the biggest contributor for the air pollution. (Oxenaar, 2021)

In Ireland, there's a growing concern for environmental sustainability, in which individuals and companies are taking initiatives to slow the hurt of environmental issues. "The EU Green Deal/Action plan has a 'zero pollution ambition' to protect citizens' health." (Oxenaar, 2021) The Green Deal/Action is an ambitious action plan set out by the EU to cut pollution down with sustainability at the heart of policies made.

Environmental concerns and regulations on waste management in Ireland can impact the production and packaging of the AI toothbrush. The toothbrush's packaging and materials should be recyclable, and any electronic components should be disposed of safely to minimize environmental impact.

The product's eco-friendliness and sustainability can influence consumer preferences and brand reputation. Consumers may prefer environmentally-friendly products, and a toothbrush that is marketed as eco-friendly and sustainable can enhance brand image and attract consumers who value sustainability.

1.1.6. Legal

The legal system in Ireland has three main sources for laws, which are Constitutional, Statute, and the common law. The Irish common law system is similar to the United Kingdom, but the difference is that Ireland has a written Constitution, which is the fundamental law of the state. Statue law (Legislation)

is passed by the national parliament which is divided in the upper and lower house. The upper house is responsible for the research of the merits of the new pieces of legislation, where the lower house is where most of the government's power resides. In order for a bill to be passed, both houses need to process and pass the bill itself. The common law is a group of legal laws which were formed from previous judicial decisions. (Walsh, 2017)

Regulations and laws regarding health and safety in the oral care industry in Ireland can impact the production and distribution of the AI toothbrush. The toothbrush must adhere to the regulations set by both countries on the quality and safety of the materials used in production. Additionally, any electronic components must meet regulatory standards for electromagnetic compatibility, electrical safety, and wireless communication in both countries. Failure to comply with these regulations can result in product recalls, legal penalties, and damage to brand reputation in both markets.

The toothbrush must adhere to Irish regulations and laws regarding health and safety, intellectual property, and labelling. The production of the toothbrush must comply with Irish laws on the quality and safety of materials used in manufacturing, as well as any regulations on waste management and environmental impact. The toothbrush's design and features should not infringe on existing patents in Ireland.

In summary, the PESTEL analysis, carried out, have revealed that the technological and social trends would be most beneficial to the public's acceptance of our product, although both the political and legal factors may present us with challenge

2. ANALYSIS OF THE SPECIFIC ENVIRONMENT (MIRO ENVIRONMENT)

2.1. Competing Companies

2.1.1. Indirect Competitors

The indirect competitors refer to potential competitors that may provide a substitute or alternative to AI Care's developed AI-powered toothbrush. There's a number of indirect competitors in this sector, a few of them being traditional toothbrush, electric toothbrush, dental floss, and mouth wash companies. Some of these products don't have the direct potential to replace or compete against an AI-powered toothbrush, but they still compete for consumer's spending power within the market. With the incorporation of AI technology into an electric toothbrush AI Care hopes to differentiate against all substitutes by offering an innovative way for users to improve their overall oral hygiene.

2.1.2. Direct Competitors

Our Direct competitors are obviously the big brand name companies that have already established their position in the market, as well as those companies that are offering almost homogeneous product as our AI-power toothbrush. Among our competitors the ones that stand out, according to Market and Market, are "Colgate-Palmolive Company (US), Procter & Gamble (US), GlaxoSmithKline plc (Ireland), Koninklijke Philips N.V. (Netherlands), Johnson & Johnson (US), Unilever plc (UK)". (Mehra, 2021) These companies are the leading companies in the market both regionally and globally.

2.2. Porter's Five Forces

2.2.1. Threat of new entrants

The AI toothbrush industry has high entry barriers due to the need for advanced technology and regulatory requirements, which includes meeting safety, quality, and labeling standards. Manufacturing the toothbrush in Ireland could provide cost advantages due to lower labor costs and favorable tax incentives for research and development, but the high capital investments

required to develop and produce the toothbrush could deter new entrants. Furthermore, the established players in the market have significant brand recognition and market share, making it difficult for new entrants to compete.

2.2.2. Bargaining power of suppliers

Suppliers of materials and components used in the AI toothbrush have moderate bargaining power. The toothbrush requires specialized components and high-quality materials, which limits the number of suppliers available. However, manufacturing the toothbrush in Ireland could provide an advantage in terms of accessing local suppliers and negotiating lower costs due to Ireland's strong relationships with European suppliers.

2.2.3. Bargaining power of buyers

Buyers of AI toothbrushes have low bargaining power due to the uniqueness of the product and limited competition. The toothbrush offers advanced features and benefits, making it difficult for buyers to find substitutes. However, the high price of the toothbrush could provide some bargaining power to consumers, particularly during economic downturns or when competitors offer similar products at lower prices.

2.2.4. Threat of substitutes

The threat of substitutes for the AI toothbrush is relatively low due to the unique features and benefits it offers. Traditional toothbrushes and other oral care products cannot match the level of cleaning and oral health benefits provided by the AI toothbrush. However, the toothbrush could face competition from other advanced oral care products that incorporate AI technology, which could threaten market share.

2.2.5. Competitive rivalry

The AI toothbrush industry has moderate competitive rivalry due to the presence of established players such as Oral-B, Philips, and Colgate. These companies have significant brand recognition, product development capabilities, and established distribution channels. Manufacturing the toothbrush in Ireland could provide a cost advantage, but companies would still need to invest in

ANALYSIS OF THE SPECIFIC ENVIRONMENT (MIRO UCAM ENVIRONMENT)

research and development and marketing to compete with these established players. The high demand for advanced oral care products like the AI toothbrush provides opportunities for new entrants, but they would need to differentiate their product and invest in marketing to gain market share.

It is clear that AI Care has a lot of competition, that are both direct and indirect, competing for the spending power within the market. Using the Porter's Five Forces analysis we can see that the AI toothbrush industry has high barriers to entry for new companies due to the need for advance technology and regulatory requirements. Threat of substitutes is low, but competition from other reputable brands could threaten market share. Competitive rivalry in the industry is moderate due to these brands, but AI Care have the opportunity to differentiate its product and gain market share through research and development, as well as employing efficient marketing strategies.

3. SWOT ANALYSIS

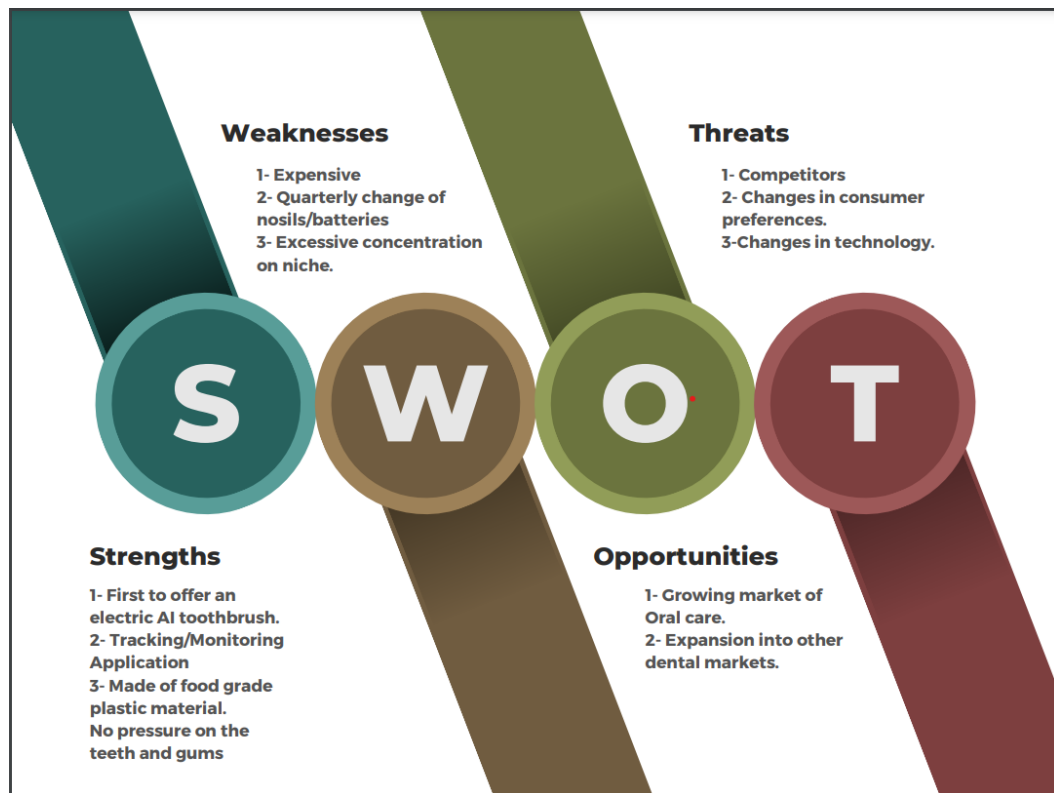


Figure 7 SWOT analysis of AI Care. Source own development

3.1. STRENGTHS

After conducting a thorough SWOT analysis, the company has identified a number of strengths, of both the company and the product itself. First off, AI Care is among the first company to introduce an electric toothbrush that has AI technology and a tracking sensor to monitor and offer AI generated feedbacks. With sustainability being one of the company's core values, making the toothbrush from high quality food grade material ensures that the company does its part in the sustainability of the world. The bristles and heads come in a variety of different modes, that cater to the individual needs and preference as it wouldn't put any unnecessary pressure on the teeth or gums.

3.2. WEAKNESSES

A few of the potential drawbacks of the toothbrush is its high price tag. With the incorporation of a mechanized toothbrush also with embedded AI technology and sensors, all of these materials are quite pricy for the company to source and develop. Apart from the high price tag, users would be required to change out the toothbrush's head at least four (4) times a year, as it is recommended by dentists to change your toothbrush for these times within a year. And lastly another drawback would be the company's concentration on a small niche market.

3.3. OPPORTUNITIES

The oral care market is very large and also continuously growing, the innovative AI technology and all of its features makes the product more distinctive. All the advance technology used can then be incorporated in a number of other oral care products, so the prospects of venturing off in other oral care products is a high possibility.

3.4. THREATS

And lastly, with the introduction of this AI toothbrush, there are a lot of well-known and large competitors within the market who has the resources to follow this trend. Even old traditional toothbrush would be seen as a cheaper substitute for individuals that cannot afford the AI-powered toothbrush. With the constant development and advancement in technology, it is just a matter of time before this new product isn't considered innovative enough. The company has to ensure that its always innovating and following current market trends in order to stay relevant. Changes in consumer preference is also likely to sway in a matter of seconds, so constant market research is essential that the company stays up to date with current market trends.

In short, AI Care has a lot of strengths that could help realize the opportunities set out. It being among the first to off an AI-powered toothbrush offers the company a competitive advantage of being the front-runners in the growing market of AI toothbrush both regionally and internationally. Even though

the product might be expensive and has a lot of already established competitors, if the company continues to conduct research and development as well as keep up with changing trends, it has the capabilities of minimize these threats and weaknesses.

4. MARKETING PLAN OBJECTIVES

After making a complete analysis of the market and external factors affecting it, as well as a SWOT analysis to outline our possible strengths, weaknesses, threats and future opportunities, specific quantitative and qualitative marketing objects have been listed out for the future growth and success of the business. The objectives outlined here helps to serve as a road map, to help guide the company in the efficient and successful marketing campaign. Outlined below are a total of six (6) realistic objective for the company to achieve in the course of three (3) years.

1. **Conduct Market Research:** A regular, in-depth, market research is essential for the company to have a deeper understanding on the customers' needs and preferences, and to help stay ahead on current market trends and also ahead of our competitors.
2. **Increase Awareness:** Being a new and ambitious start up, AI Care needs to increase the awareness of the unique features of the new innovative AI-powered toothbrush. This objective can be measured quantitatively by first increasing our social media presence, and aiming to amass a minimum of 1,000 followers in the first 6 months, and slowly grow this continuously over the years by having engaging and relevant content being shared. We would also measure website traffic to the official AI Care's website and hope to increase presales figures in the last 6 months before launch.
3. **Educate Customers:** This marketing plan should hope to educate customers on the benefits of the AI-powered toothbrush and all its features, as well as educate them on the proper oral hygiene. Through a combination of social media content as well as onsite events that can promote the oral health benefits of this AI toothbrush. Out of which these social media content should be continuously posted, at least twice a week, to ensure maximum followers' interaction, and AI Care plans to have at least 10-20 onsite educational events at local school to teach children the importance or oral health as well as outline the benefits of having this AI technology in our daily use.

4. **Drive & Generate Repeat Sales:** The main objective of many companies is to make a profit. This marketing plan aims to help market and promote the product in order to generate sales as well as maintain customer satisfaction. Seeing as the satisfaction of the customers is among one of the company's core values, we hope to gain the consumers trust and loyalty by providing excellent customer service as well as launching new and innovative products. As its easier to sell a product to existing customers than trying to sell to brand new target markets. With this perspective, AI Care hopes to sell at least 2000 units for the first few years and generate about 20-40% increase in sales the following years.
5. **Build Relationships with Influencers:** With the popularization of social media, the company also needs to establish and build a strong relationship with famous dental professional In Ireland and social media influencers to help with the promotion of the product and boost customer interaction.
6. **Monitor and Evaluate Results:** Given the multitude of objectives and plans, it becomes crucial to meticulously track and monitor the outcomes of each action we undertake, in order to have a track record of the success of the marketing efforts as well as make necessary adjustments.

5. INTERNAL ANALYSIS OF THE COMPANY

5.1. COMPANY DEFINITION AND GENERAL CHARACTERISTICS

AI Care is a new ambitious startup aiming to revolutionize the way individuals take care of their oral health, by introducing a new innovative spin on the traditional toothbrush. AI Care is among the first to manufacture this innovative design feature for a toothbrush, while aiming to revolutionize the oral care industry by providing an innovative solution that's tailored to the needs of its customers.

The main product produced by AI Care is its AI toothbrush, which incorporates the use of AI technology and sensors within the head and bristles of the toothbrush. This new technology offers users the ability to monitor and track their brushing habits and oral health with the use of an accompanying App, while also offering recommendations on improving their brushing patterns for optimal oral hygiene. The sensors also come equipped with the ability to detect the early onset of oral health diseases, which provides both dentists and users with the necessary information for prevention and treatment.

AI Care is committed to producing high quality oral health care products that prioritizes the improvement of the overall user's oral hygiene habits as well as their experiences. The company employs a team of experts that specializes in both AI technology and oral care to ensure the development of a product that is state-of-the-art and adheres to the highest of quality standards of safety as well as function ability. AI Care's innovative approach and commitment to the improvement of the oral health industry would establish it as a prominent player in the industry on a whole.

5.2. SECTOR SIZE AND COMPARABLE MARKET STRUCTURE

The global oral care market is a significantly large. The market caters to millions of individuals which according to Mehra (2021), "It is expected to continue growing at a CAGR of 3.1% from 2021-2006 and is projected to reach 54.9 billion

by 2026.” This global market incorporates different segments such as, toothbrushes, toothpaste, mouthwash, and dental floss, etc.

On the other hand, in comparison to the global CAGR, Ireland has recorded an average CAGR of 2.9% as of 2010. (*Ireland Oral Care Market Analysis (2013 - 2023)*, 2019) In terms of toothbrush market size within Ireland, it has seen a substantial increase of 747%, according to. (IndexBox, 2023) The toothbrush market is substantially greater than the overall oral care market in Ireland, one reason could be because of a number of reasons such as the COVID pandemic or a number of different circumstances. According to IBISWorld (2022), due to a large withdrawal of dentists, within Ireland, denying the use of state-funded oral health treatments, because of lack of fundings from the state itself for certain treatments, has impacted the oral care industry on a whole. This report states that preventative treatments have fallen as well as the reports for an increase of tooth extraction. This report also stated that the annual rate has also drop to 1.2% from 2017-2022. Even with the recent decline in the oral care industry from 2017-2022, the market is still expected to increase over the next few years, due to the aging population, the recovery of disposable income from the pandemic as well as the increasing number of private health insurance customers. (IBISWorld, 2022)

In the aspect of market structure, the oral care industry is very competitive, with a number of, already, established players and a number of other smaller enterprises, all competing for a share of the market. With the presence of multinational corporations, such as Colgate-Palmolive, Procter & Gamble, and GlaxoSmithKline, which dominates the industry with their wide range of oral care products and extensive network, it makes the fight for market share really difficult.

5.3. MISSION, VISION, AND VALUES

5.3.1. Mission

Al Care's mission is to provide innovative and well-tailored oral care products to enhance the brushing experience of each individual.

5.3.2. Vision

AI Care seeks to become the most influential brand in the oral care industry, by providing technologically revolutionary solutions for oral hygiene.

5.3.3. Values

- **Innovative** – AI Care seeks to be at the forefront of innovation in the oral health industry, by providing oral care products that would new and essential for the betterment of the individual's overall oral health as well as providing the advancement of the oral health industry.
- **Customer Satisfaction** – The customers are our main focus here at AI Care. The company aims to achieve maximum customer satisfaction by providing revolutionary and quality products.
- **Personalization** – Personalization aspect of the company help ensure customer satisfaction. Each user is offered personalized recommendation to help promote their oral health in the long run
- **Sustainability** – It is important that the company does everything in its power to help with the preservation and maintain of a bright and better future. By pursuing sustainable goals, the company seeks to minimize its carbon footprint to promote a health global system.

These values best represent the company's mission and vision. We strive to provide users with the best experience possible and also maintain strong business relationships with both customers and suppliers alike. With these strong core values, we would be able to position ourself at the forefront to drive the future of the oral care industry.

5.4. COMPANY DIFFERENTIATION

With the incorporation of AI technology, AI Care should hope to differentiate itself from other competitors in the oral care industry. The AI technology and sensors embedded in the bristles of the toothbrush provides the users with real-time feedback as well as recommendations to their brushing

techniques and patterns, with the use of the accompanying mobile application (APP). With the use of the mobile APP and the AI sensors, this product also helps the users monitor and track the early onset of oral diseases. Early detection of these diseases can help the users take the appropriate measures, by seeking professional dental practitioners to help implement the necessary measure needed to prevent the seriousness of the disease. This can help users save both time and money in the long run by not having to undergo expensive treatments and surgeries due to late diagnosis. The mobile APP can also assist dental professionals with valuable data on patients' oral status, to help with quick and accurate diagnosis.

5.4.1. Demographic Segmentation

A wide range of age groups and income levels can benefit from the AI toothbrush. The product can be used by children, adults, and seniors interested in maintaining good oral health. Each age group could benefit from the use of this product. In terms of children, children below the ages of 12 could benefit from the decrease in tooth decay, which as of 2014 tooth decay in 12-year-olds have decreased to 40% from 80% in 1984 (DOHI, 2019 as cited by Donovan, Sheehan, A and O'Sullivan R. (2021)).

Adults with specific dental concerns, such as braces, dental implants, or periodontal disease, will find this toothbrush particularly useful. As toothbrushing habits, of brushing twice a day, have seen an increase from 69% in 1988 to 75% in 2009 (Chenery, 2011 as cited by Donovan, Sheehan, and O'Sullivan (2021)).

5.4.2. Psychographic Segmentation

At a psychographic stand-point, individuals who value their overall oral health, are more willing to invest in a substantial amount of money on their oral care products. These individuals are more likely to be drawn towards the unique selling point of an AI-powered toothbrush, as the toothbrush gives them the opportunity to keep track of their brushing habits and patterns, as well as help in the detection of early onset of many oral diseases. These individuals are also more likely to help promote their friends and family members with the proper oral health products and advice.

5.4.3. Behavioural Segmentation

Individuals who are motivated to maintain good oral health by brushing and flossing regularly are the target audience for an AI-powered toothbrush. It is more likely that these individuals will purchase an advanced toothbrush that offers advanced features and benefits because of a history of dental problems or concerns about their oral health. It is also possible they prefer products that are easy to use and deliver fast, effective results.

5.4.4. Geographic Segmentation

First, the focus will be on the local market in Ireland, where AI Care is located. This allows for a targeted approach to distribution, promotion, and brand awareness. Once the product has gained traction, other markets can be explored.

5.5. BENEFITS OF MARKET STRUCTURE

The market structure for the AI toothbrush offers several advantages that contribute to the product's success and market positioning. With limited Competition, the AI toothbrush operates in a niche industry that combines dental care and AI technology, therefore there is little competition. Due to this distinctive market structure, AI Care can set its product apart from conventional toothbrushes and achieve a competitive edge. Since there aren't many direct rivals in this market, AI Care has the chance to become a pioneer and market leader in AI-powered oral care products. Due to the low level of competition, AI Care is able to significantly increase its market share and foster consumer brand loyalty.

There's also a high demand for innovation in the oral care sector. It is constantly changing as people look for novel solutions to their problems with oral health. With the increased popularity in AI technology, "The global dental AI market is expected to reach 36 billion by 2026". (Planet DDS, 2023) The market structure offers AI treatment the chance to profit from the substantial demand for cutting-edge technology and individualized dental treatment.

5.6. MARKETING MIX

5.6.1. Product

As a revolutionary product, the AI-powered toothbrush provides both children and adults with a unique, innovative, and customized brushing experience. A toothbrush with advanced AI technology ensures maximum oral hygiene by providing real-time feedback on brushing technique and tracking brushing patterns in addition to offering multiple brushing modes, this toothbrush also features a sleek design and a comfortable grip that makes it easy to use whether you are a parent or a child. The durability of the high-quality material used, in the manufacturing process, ensure the longevity of the product, making it able to last as long as 5-years without any defects.

The accompanying APP also helps track and keep record of the daily use and also monitor the oral health of the user. This feature makes it beneficial to both the users and dental professionals, as it helps the users detect the early stages of tooth decay and other oral diseases, and also helps dental professionals the opportunity to conduct quick and accurate diagnosis with the records provided.

5.6.2. Distribution

A distribution strategy focusing on both online and offline channels will be adopted for the AI-powered toothbrush. The toothbrush will be available through the company's website and on e-commerce platforms, such as Amazon and the also the company's website. In addition, the toothbrush will be sold through retail stores, including specialty stores, pharmacies, and supermarkets, and the distribution strategy will aim to provide easy access to the product and make it available to consumers in multiple channels.

5.6.3. Communication

Creating awareness and generating buzz about the AI-powered toothbrush is the goal of the promotional strategy. The promotional activities will include online and offline advertising, influencer marketing, social media

campaigns, and email marketing. Other promotional activities would also be carried out, such as radio advertisements, billboards, as well as tv advertisements in order to establish the AI-powered toothbrush as a leading brand in the oral care industry and establish a strong brand image. To achieve this the company should look to invest about €10,000 to carry out these marketing campaigns, to further propel the brand's identity.

5.6.4. Price

The pricing strategy of the AI-powered toothbrush hopes to reach a target audience that can afford to pay a premium for the innovative qualities and benefits of the product. The company hopes to sell this product for a €200 one-time payment for a bundle of the electric toothbrush, UV disinfectant and charging station, as well as 3 other bristle heads with AI embedded sensors. The heads are easily exchangeable and offering 3 separate heads ensure the users are making a minimum payment of this €200 for the first year, as it is recommended by dental professionals, as well as top brands such as Colgate, that you should change your toothbrush every 3-4 months. (Colgate, 2023) After which every toothbrush head sold separately would be sold at a price of €50 per head. This pricing strategy also hopes to attract more buyers of the bundle pack as it has more value for the price tag. Whereas the individual toothbrush by itself would cost €180.

This premium price tag is to offset the cost of production, as it costs the company €100 to manufacture as well as other costs to sell the toothbrush itself. Also, a cost of €20 for the individual toothbrush heads. With these costs that ensure the company with an 80% profit margin on the sale of individual toothbrushes and also 150% profit margin on the sale of individual toothbrush heads.

Other price discrimination strategies would also be taken into consideration, such as family bundles, which would include 2-3 toothbrushes with 6-9 toothbrush heads included. This bundle would hope to reach the family segment that puts a high value on the oral health of their family. These bundles could potentially be priced at €350-500 respectively, making it much more appealing for the family-oriented segment to gravitate towards this offer.

Another course of pricing strategy that the company hope to employ is that of subscription-based service, in which the customer can make a quarter yearly payment plan. This payment plan gives the user the opportunity to pay at a reduced price every 4 months for the delivery of a new toothbrush head, directly to their doorstep. This subscription would cost the customer €35 per head every 4 months, which is €15 less than buying instore. There would also be the option to add an insurance payment of €5 a month, that ensures the customer a free replacement for the toothbrush in case of damages or any other faulty issues.

6. ACTION PLAN

It is important to note that AI Care has an initial start-up budget of €290 thousand, half of which is coming for the owners' startup capital and the remaining half coming from crowdfunding events such as Kickstarter and online presales. This initial capital is then shared among the various needs to establish, launch, and market the product as outlined further.

1- Product:

The AI-powered toothbrush is a new product and its unique features and benefits helps differentiate itself from the competitors. In order to maintain this competitive edge over the competitors, continuous innovation is needed from the company. By conducting regular market research and taking customers reviews and complaints, AI Care should have the basis to continuously improve on its products, as well as seek new products to branch off. As to keep up with the company's core values AI Care should always seek to maintain customer satisfaction and continuous innovation.

The company has set aside a total €120 thousand for the research and development and the final manufacturing process of the product. These actions re to be completed in the first year, and an extra €10-20 thousand for continuous research and development in the following 2 years.

2- Price:

The pricing for the AI-powered toothbrush is €180 per unit and the strategy in the beginning years would be mainly conducted through bundle deals and packages sale at a price of €200-500, as it gives the customer more of a perceived value. Also, the implementation of subscription services, such as a quarterly payment for new toothbrush head replacement at a discounted price, or the €5 insurance subscription over a period of time would be beneficial for the company's increased revenue. AI Care should also monitor new and old competitors' pricing and adjust prices accordingly to help remain competitive.

3- Distribution:

The AI-powered toothbrush would first be available for presale orders, before the launch of next year, on AI Care's website. After which online sales can also be generated on its website and later can diversify to other online retail services, such as Amazon or eBay. There will also be a physical brick-and-mortar store established in the heart of Dublin, for easy accessibility for majority of the desired target market. This brick-and-mortar store would then stand as retail, storage, as well as distribution hub for the AI-powered toothbrushes. After which distribution channels would be established with all the major supermarkets and pharmacies alike, to help broaden the range of distribution, to eventually make the AI-powered toothbrush accessible to the whole of Ireland.

AI Care has also set aside a total of €75 thousand for the establishment continued expansion of our distribution channels as well as the product line.

4- Communication:

For the success of the company as well as the success of the product launch, adequate advertisement and marketing is necessary. To do this the company needs to first establish brand awareness by conduction in email and social media marketing campaigns. Theses campaigns should seek to reach the desired target market. In order to further boost brand awareness, the company could also seek the assistance of social media influencers to help push our product to their viewers, based on a commission-based deal.

Another way the company can help promote brand awareness, is by having billboard advertisements and radio and tv advertisements. These forms of marketing can help reach a wide variety of the target market. In order to achieve the desired results, an investment of €10,000 would be sufficient for these marketing campaign.

5- Actions to be Taken:

In order to keep track and measure the success of the marketing plan, it is essential to establish key performance indicators (KPIs), such as sales, customer satisfaction through surveys and questionnaires, etc. It is also essential to conduct regular market research as well as monitor customers' feedback, to keep up with market trends and identify areas for improvement to help have a competitive advantage.

To summarize, the company has a total of 290 thousand Euros, which is divided among the research and development, marketing, launch, and expansion of the business. Because it is a startup, a large portion of this figure is funnelled into the development, manufacturing and establishment of the product and brick-and-mortar aspect of the business itself. 150 thousand Euros was set aside for the first year, which should cover all of these expenses, the 150 thousand Euros are dedicated for the following 2 years for the expansion and continuous growth of the business and product line.

7. BUDGET

The budget and road maps below show the actions that the company should take year by year. The first year 150 thousand Euro are invested for the final development and launch of the product as well as collaborations and marketing and promotional campaigns. On the second year 75 thousand Euros are dedicated to the expansion of distribution channels, product line as well as exploring potential international markets. The last year of the plan 65 thousand Euros is assigned for the continued research and development as well as strengthening partnership deals.

Road Map

Year	Action Plan	Budget
2024-2025	Develop and finalize the product	150,000
	Establish manufacturing and distribution channels	
	Launch marketing and promotional campaigns	
	Develop partnerships and collaborations	

Table 1 Road Map Year 1 Source: own development

Year	Action Plan	Budget
2025-2026	Expand distribution channels	75,000
	Expand the product line	
	Increase brand awareness	
	Explore international markets	

Table 2 Road Map Year 2 Source: own development

Year	Action Plan	Budget
2026-2027	Continue product development	65,000
	Increase market share	
	Strengthen partnerships and collaborations	
	Evaluate performance and plan for future growth	

Table 3 Road Map Year 3 Source: own development

Budget Plan (€ in thousands)

Action	Months	Price	Total
Product development	January-March 2024	60	60
Manufacturing and distribution	March-June 2024	60	120
Marketing and promotional	June-September 2024	10	130
Partnership and collaboration	September-December 2024	10	140
Distribution channel expansion	January-March 2025	10	150
Product line expansion	March-June 2025	20	170
Marketing and promotional	June-September 2025	35	205
International market exploration	September-December 2025	10	215
Continued product development	January-March 2026	20	235
Market share increase	March-June 2026	20	255
Partnership and collaboration	June-September 2026	20	275
Performance evaluation and future growth planning	September-December 2026	15	290

Table 4 3-year budget plan for AI Care Source: own development

8. MARKETING PLAN CONTROL

The purpose of marketing plan control is to gauge the effectiveness of the marketing plan, measure the progress towards achieving company's goals and objectives, while also, making the necessary alterations to ensure the success of the marketing plan. First, we should establish a number of specific Key Performance Indicators (KPIs) that align with the company's objectives and goals, such as sales revenue, market share, customer satisfaction, and brand awareness. In order to monitor the company's progress, it is necessary to keep track and analyse in order to evaluate the performance of the marketing initiatives.

The company should carry out regular sales and market analysis to assess the performance of the AI-powered toothbrush across different markets and customer segments on a regular basis. Also identify new trends, patterns, and areas for improvement by analysing sales data while identifying opportunities and challenges.

Customer satisfaction being one of the company's core values, it is essential for us to gather customer feedback on the product and marketing efforts through surveys, reviews, and social media monitoring and also address their concerns by taking necessary actions to improve the product at hand.

8.1. FINANCIAL ANALYSIS OF THE COMPANY

In order to understand the viability of the company, it is essential to conduct a thorough financial analysis. This analysis will focus on the company's profitability and as well as it's stability. Taking into account the price per unit expected to be sold and an approximate figure in the cost it takes to produce the product, we can then calculate the profitability of the company.

Let's assume that AI Care expects to sell 2,000 units of AI toothbrush in the first year at a selling price of €200 per unit. Seeing as we do not have the local growth rate of toothbrush in Ireland, we can use the interest rate for 5-year bonds which equals 2.9%", according to "Deuda de España (2023): Bonos del Estado a 5 años 2023".

Considering the company's cost analysis, and acknowledging that we're a startup, we will proceed based on a set of general assumptions. Cost of Goods Sold (COGS) is €100 per unit of toothbrush and Fixed Costs of 50,000 per year (including rent, salaries and utilities, etc.).

With this information we can calculate the profitability of the company as well as the operating margin. Below are tables of the profitability of the company in 3 scenarios, a pessimistic scenario in which the company only manages to sell 1,000 units per year, a neutral perspective in which the company manages to sell 2,000 units per year, and an optimistic perspective in which the company manages to sell 5,000 units per year.

Year	Revenue	COGS	Gross Profit	Fixed Cost	Operating Income	Gross Margin	Operating Margin	NPV	IRR
1	200,000	100,000	100,000	50,000	50,000	50.00%	25.00%		
2	205,800	100,000	105,800	50,000	55,800	51.41%	27.11%		
3	211,768	100,000	111,768	50,000	61,768	52.78%	29.17%	7,981.4	6%

Table 5 Pessimistic Perspective Source: own development

Year	Revenue	COGS	Gross Profit	Fixed Cost	Operating Income	Gross Margin	Operating Margin	NPV	IRR
1	400,000	200,000	200,000	50,000	150,000	50.00%	37.50%		
2	411,600	200,000	211,600	50,000	161,600	51.41%	39.26%		
3	423,536	200,000	223,536	50,000	173,536	52.78%	40.97%	307,665.8	89%

Table 6 Neutral perspective Source: own development

Year	Revenue	COGS	Gross Profit	Fixed Cost	Operating Income	Gross Margin	Operating Margin	NPV	IRR
1	900,000	500,000	400,000	50,000	350,000	44.44%	38.89%		
2	926,100	500,000	426,100	50,000	376,100	46.01%	40.61%		
3	952,957	500,000	452,957	50,000	402,957	47.53%	42.28%	915,174.6	233%

Table 7 Optimistic perspective Source: own development

As seen in the table above, after taking into account the gross profit and operating income, as well as the revenue, we can calculate the gross margin of the company for the next 3 years, assuming a stable market growth of 2.9% (5-year interest rate on binds). We can see that the IRR is positive in all scenarios with a 6% in the pessimistic scenario, 89% in the neutral scenario and 233% in the optimistic scenario, this proves the profitability of this project. Calculations of the NPV and IRR can be found in the ANNEX on page 54.

CONCLUSIONS

In today's fast-paced and digitally-driven world, consumers are increasingly seeking innovative and effective solutions to simplify their daily routines and improve their overall well-being. Using AI technology in toothbrushes offers people of all ages an exciting and unique approach to oral hygiene. Using a toothbrush with the ability to track and provide feedback on brushing technique can help individuals of all ages develop effective brushing habits, resulting in better oral health for everyone. As well as adding an element of fun to the brushing experience, the integration of games and rewards also motivates people to maintain good oral hygiene.

In addition, toothbrushes equipped with AI can provide valuable data to individuals, dentists, and health professionals. By monitoring users' brushing habits over time, individuals can adjust their oral care routine to achieve optimal results. The data can also be used by dentists and health professionals for identifying patterns and offering customized oral care recommendations. A toothbrush with AI technology is a useful tool to promote good oral hygiene in people of all ages since it improves brushing technique and makes the experience more engaging.

Furthermore, toothbrushes with AI technology can be beneficial for people with special needs and disabilities as well. For example, individuals with motor coordination difficulties might benefit from the toothbrush's real-time feedback, which can help them improve their brushing technique. Tracking brushing habits over time can also provide valuable information for caregivers or health professionals, who can then develop a personalized oral care regimen together.

People of all ages can benefit from artificial intelligence toothbrushes, allowing them to improve brushing technique, make the experience more enjoyable and engaging, and collect valuable data for individuals, dentists, and health professionals. Additionally, toothbrushes with AI technology can be useful for people with special needs or disabilities; overall, these toothbrushes can improve oral health and general well-being for everyone.

In conclusion, this marketing plan has demonstrated the viability of the project and that AI toothbrushes have significant potential to improve oral health. However, for these products to be accepted by the market, it is essential to address challenges related to cost and market perception. By addressing these challenges, we believe that the market for AI toothbrushes will be able to grow at a rapid rate and become an essential part of everyday oral care.

REFERENCES

Statista Research Department. (2022, March 29). *Ireland: Dental practice expenditure.*

Statista. <https://www.statista.com/statistics/1299535/dental-practice-expenditure-in-ireland/>

Carvalho, L. (2019, April 2). *Irish jobless rate at over 11-year low of 5.4%.*

Tradingeconomics.com; TRADING ECONOMICS.

<https://tradingeconomics.com/ireland/unemployment-rate>

Catherine, F. (n.d.). *Leading global companies in ireland.*

Www.educationinireland.com. <https://www.educationinireland.com/en/why-study-in-ireland-/ireland-s-strengths/leading-global-companies-in-ireland.html>

Central Statistics Office. (2023). *Ireland, the EU and educational attainment - CSO - central statistics office.* Wwww.cso.ie.

<https://www.cso.ie/en/releasesandpublications/ep/p-eda/educationalattainmentthematicreport2021/irelandtheeuandeducationalattainment/>

Colgate. (2023). *How often should you change your toothbrush?* Wwww.colgate.com.

<https://www.colgate.com/en-in/oral-health/brushing-and-flossing/how-often-should-you-change-your-toothbrush-0114>

Deuda de España. (2023). *Deuda de españa: Bonos del estado a 5 años 2023 |*

datosmacro.com. Datosmacro.expansion.com.

<https://datosmacro.expansion.com/deuda/espana/tesoro/bonos-5-anios>

Donovan, L., Sheehan, A., & O'Sullivan, R. (2021). An overview of dental services and oral health in northern ireland and ireland an overview of dental services and oral health in northern ireland and ireland. *An Overview of Dental Services and*

Oral Health in Northern Ireland and Ireland. <https://doi.org/10.14655/11971-1084889>

Ellis, J. (2019, November 21). *The consolidation of the UK and Irish dental markets.*

Pinsent Masons. <https://www.pinsentmasons.com/out-law/analysis/the-consolidation-of-the-uk-and-irish-dental-markets>

Fanning, R., & John O'Beirne Ranelagh. (2019). Ireland - Government and society. In

Encyclopædia Britannica.

<https://www.britannica.com/place/Ireland/Government-and-society>

IBISWorld. (2022, June 21). *IBISWorld - industry market research, reports, and*

statistics. Www.ibisworld.com. <https://www.ibisworld.com/ireland/market-research-reports/dental-practices-industry/>

ICTSkillnet. (2022, February 1). *The evolution of tech in ireland.* Technology Ireland

ICT Skillnet. <https://ictskillnet.ie/the-evolution-of-tech-in-ireland/>

IndexBox. (2023, June 1). *Ireland's tooth brush market report 2023 - prices, size,*

forecast, and companies. Www.indexbox.io.

<https://www.indexbox.io/store/ireland-tooth-brushes-market-analysis-forecast-size-trends-and-insights/>

Ireland Department of Health. (2019, April 3). *Smile agus sláinte – national oral health*

policy. Www.gov.ie. <https://www.gov.ie/en/publication/90687b-smile-agus-slainte-national-oral-health-policy/?referrer=http://www.health.gov.ie/wp-content/uploads/2019/04/NOHP-Main-FINAL.pdf>

Ireland Department of Health. (2022). Health in ireland - key trends 2022. oral health

and healthy ageing. In *Dental Health Foundation.* Department of Health.

https://www.dentalhealth.ie/assets/files/pdf/key_health_trends_2022.pdf

Ireland oral care market analysis (2013 - 2023). (2019). Wwww.marketresearch.com;
Mordor Intelligence Inc. <https://www.marketresearch.com/Mordor-Intelligence-LLP-v4018/Ireland-Oral-Care-12434353/>

Martin, M. (2023, February 21). *Porter's five forces: Analyzing the competition*.
Business News Daily. <https://www.businessnewsdaily.com/5446-porters-five-forces.html>

mba SkoolTeam. (2021, February 21). *Oral-B PESTLE analysis*. MBA Skool.
<https://www.mbaskool.com/pestle-analysis/companies/18149-oral-b.html#political>

Mehra, A. (2021, November 17). *Oral care/hygiene industry strategy, insights | oral care/hygiene market share, 2026 | marketsandmarkets™*.
Wwww.marketsandmarkets.com.
<https://www.marketsandmarkets.com/ResearchInsight/oral-care-market.asp>

National Geographic KiDs. (2014, March 21). *Ireland country profile - national geographic kids*. Geography.
<https://kids.nationalgeographic.com/geography/countries/article/ireland#:~:text=use%20is%20prohibited.->

Next Move Strategy Consulting. (2023, January). *Artificial Intelligence Market Size and Share | Analysis - 2030*. Wwww.nextmsc.com.
<https://www.nextmsc.com/report/artificial-intelligence-market>

OECD Data. (2014). *Ireland - OECD data*. TheOECD. <https://data.oecd.org/ireland.htm>

OECD/European Observatory on Health Systems and Policies. (2019). *Ireland: Country health profile 2019*. Oecd-ilibrary.org; OECD Publishing. https://read.oecd-ilibrary.org/social-issues-migration-health/ireland-country-health-profile-2019_2393fd0a-en#page1

Oxenaar, S. (2021). *Country study ireland A PESTLE analysis on the environment for citizen-led renovation services in ireland.*

<https://www.rescoop.eu/uploads/rescoop/downloads/REScoop.eu-Ireland-PESTLE-analysis-for-citizen-led-renovation-programs.pdf>

Peterdy, K. (2023, May 10). *PESTEL analysis*. Corporate Finance Institute.

<https://corporatefinanceinstitute.com/resources/management/pestel-analysis/>

Planet DDS. (2023, March 24). *How AI is transforming dental technology in 2023.*

Planet DDS. <https://www.planetdds.com/blog/how-ai-is-transforming-dental-technology-in->

Saleh, P. (2016, March). *(PDF) strategic management; ansoff matrix of P&G.*

ResearchGate.

https://www.researchgate.net/publication/348331238_Strategic_Management_Ansoff_Matrix_of_PG

StudyCorgi. (2023, February 20). *Oral-B Electric Toothbrushes: Marketing Plan | Free*

Essay Example. StudyCorgi.com. <https://studycorgi.com/oral-b-electric-toothbrushes-marketing-plan/>

Taiwan News. (2023, May 19). *Manual toothbrush market size to see huge growth by*

2031 | unilever, proctor & gamble | taiwan news | 2023-05-19 12:21:32. Taiwan

News. <https://www.taiwannews.com.tw/en/news/4896947>

Thormundsson, B. (2023, May 3). *Artificial Intelligence market size 2030*. Statista.

<https://www.statista.com/statistics/1365145/artificial-intelligence-market-size/#:~:text=According%20to%20Next%20Move%20Strategy>

Walsh, S. (2017, November 17). *The irish legal system – explained*. Stephen Walsh &

Co. | Solicitor Kildare. <https://stephenwalshsolicitors.ie/irish-legal-system-explained/#:~:text=Constitutional%20Law>

WorldData.info. (2023). *Economics in Ireland compared to the EU*. Worlddata.info.

<https://www.worlddata.info/europe/ireland/economy.php#:~:text=Worldwide%20gross%20domestic%20product%20in>

[0gross%20domestic%20product%20in](https://www.worlddata.info/europe/ireland/economy.php#:~:text=Worldwide%20gross%20domestic%20product%20in)

Worldometer. (2019). *Ireland population (2019) - worldometers*. Worldometers.info.

<https://www.worldometers.info/world-population/ireland-population/>

ANNEX

Pessimistic

Investment				
Year (t)	A	Q_t	i	$Q_t(1+i)^{-t}$
0	150.000			
1		50.000	0,03	48.590,9
2		55.800	0,03	52.699,1
3		61.768	0,03	56.691,4
Actual Value (AV) =				157.981,4
NPV = AV-A =				7.981,4
Conclusion (realizable, not realizable) =				REALIZABLE

Table 8 Pessimistic scenario

Neutral

Investment				
Year (t)	A	Q_t	i	$Q_t(1+i)^{-t}$
0	150.000			
1		150.000	0,03	145.772,6
2		161.600	0,03	152.619,7
3		173.536	0,03	159.273,5
Actual Value (AV) =				457.665,8
NPV = AV-A =				307.665,8
Conclusion (realizable, not realizable) =				REALIZABLE

Table 9 Neutral scenario

Optimistic

Investment				
Year (t)	A	Q_t	i	$Q_t(1+i)^{-t}$
0	150.000			
1		350.000	0,03	340.136,1
2		376.100	0,03	355.199,7
3		402.957	0,03	369.838,9
Actual Value (AV) =				1.065.174,6
NPV = AV-A =				915.174,6
Conclusion (realizable, not realizable) =				REALIZABLE

Table 10 Optimistic scenario