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Market Research for Smart Home Products in Finland. Case Study: Tropic Thunder

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Abstract

This thesis explores the opportunities for selling smart home products of a Vietnamese company in the Finnish market through the launch of a startup company. The research involved analyzing the current business environment in Finland and collecting and analyzing data on customer preferences and interests. Three main research questions were answered through the research process: 1) Who is the potential audience for smart home products? 2) Are people in Finland willing to use smart home products to help them solve problems in their daily life? 3) In what security and safety features of smart home products are people interested in Finland?

The results of the study suggest that smart home products have gained significant interest in the Finnish market, particularly among middle-aged consumers. The pricing of the product was also found to be an important factor for customers, as the product is relatively expensive. In terms of features, customers value energy efficiency, security, and convenience. Nonetheless, the research provides a valuable foundation for developing a business plan and exploring opportunities for expanding the market for smart home products in Finland.

In general, the results indicate that there is a viable market for smart home products in Finland and that a possible new startup company can take advantage of the friendly business environment and government funding opportunities to launch and grow its business.

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Business plan, market research, smart home product

Contents

1	Introduction	4
1.1	History of Tropic Thunder.....	4
1.1.1	The company's business strategy and state of business.....	6
1.1.2	The products of Tropic Thunder.....	7
1.2	Motivation and aim of the thesis	10
1.3	Comparison to other thesis	10
1.4	Focus and limitations	12
1.5	Structure of the thesis.....	13
2	Literature review	14
2.1	Using Chat GPT.....	14
2.2	Describe topic to Chat GPT	15
2.2.1	Ask for relevant keywords and search terms	15
2.2.2	Evaluate keywords suggested by Chat GPT	15
2.2.3	Use keywords and evaluate findings and choose best references.....	17
2.3	Marketing mix	18
2.4	Peste analysis.....	20
2.5	SWOT analysis	23
2.6	Smart Home products in Finland	25
2.6.1	PESTEL Analysis.....	25
2.6.2	Business Idea	28
3	Methodology	30
3.1	Research questions	30
3.1.1	Question 1: Who is the potential audience for smart home products?.....	31
3.1.2	Question 2: Are people in Finland willing to use smart home products to help you solve problems in their daily life?.....	31
3.1.3	Question 3: What security and safety features of smart home products are people interested in in Finland?	31
3.2	Methods.....	32
3.2.1	Method for research question 1	33
3.2.2	Method for research question 2	34
3.2.3	Method for research question 3	35
3.3	Data Sources	36
3.4	Data analysis	37
3.5	Ethicality, validity, and reliability.....	38
4	Results and SWOT analysis	40
4.1	Results of Interview for research question 1	41
4.2	Results of interview for research question 2	41
4.3	Results of interview for research question 3	48
4.4	SWOT analysis	49
5	Discussion and conclusion.....	52
5.1	Discussion	52
5.2	Conclusion	53

Appendices

Appendix 1 Interview Questions

1 Introduction

According to Deschamps – Sonsino (2018), the concept of smart homes originated in a research consortium funded by the US Government in 1984, led by the National Association of Home Builders. (Deschamps – Sonsino 2018, Ch.4). A smart home refers to a residential space equipped with Internet of Thing devices and systems that enable residents to control and automate various functions and features of the home, such as lighting, heating, security, entertainment, and household appliances (Miller 2017, Ch. 1). These interconnected devices and systems can be remotely controlled through a mobile app or web interface. (Tropic Thunder 2023).

The concept of a smart home is rooted the Internet of Things (IoT), which involves a network of disparate smart devices that are interconnected to provide automatic operation and decision-making capabilities. (Miller 2017, Ch. 1).

The author had the opportunity to do an internship at the Tropic Thunder. During the internship, the author noticed an opportunity to sell company products in Finland, where the author is studying. Based on the study's findings, the author can utilize the results to establish a new technology company specializing in the sale of smart home and office devices and solutions.

1.1 History of Tropic Thunder

Tropic Thunder is a technology company in Vietnam. It has been operating for more than 14 years, specializing in consulting and deploying solutions for network infrastructure, servers, and CCTV systems. Table 1 shows the development of the company. As the 4.0 technology revolution gained momentum worldwide in 2018, the company's leadership recognized the benefits of technology and its

new development trends. They then recruited highly skilled and innovative experts to establish a department specializing in developing solutions on the IoT technology platform and cloud computing management technology. (Ho 2023.)

Year	Event
2009	Tropic Thunder was officially established
2010 - 2011	Successfully deployed various solutions and products for network infrastructure and servers, ERP, and CCTV
2018	Start developing IoT solutions and cloud computing management technology
2019	Launched and successfully deployed the first solution like Centralized screen management
2020	Completed the IoT management platform and other solutions. Focused on development and customer service
2021-2023	Tropic Thunder is focusing on three fields such as AI cameras, virtual assistants, and smart buildings.

Table 1. Development of Tropic Thunder (Ho 2023).

The company has developed an IoT management platform and centralized solutions. With the aim of providing tailored solutions to meet the specific needs of customers, Tropic Thunder actively collaborates with customers to address their specific requirement and facilitate their hardware digitization journeys. The company is committed to continuously enhancing the quality of its products and

services by allocating substantial resources to this endeavor. (Tropic Thunder 2023.)

Tropic Thunder serves as a collaborative platform for individuals driven by a shared passion for crafting exceptional products and solutions that cater to the ever-being of individuals. The company remains at the forefront of innovation, consistently delivering practical and forward-looking offerings that resonate with the dynamic market environment (Ho 2023.)

1.1.1 The company's business strategy and state of business

Tropic Thunder has used IoT technology to provide automation and system management solutions for business since 2019 and the company has achieved much success in providing cloud services and system management for businesses in Vietnam (Ho 2023).

Tropic Thunder has focused on developing cloud products and solutions to meet customer needs and strengthen competition with industry competitors. Tropic Thunder has increased investment in new technologies such as artificial intelligence, blockchain, and IoT to deliver digital solutions to meet the increasing needs of customers. (Tropic Thunder 2023.)

To meet the demands of its rapid expansion, Tropic Thunder has increased its workforce by hiring additional talented individuals. This strategic move has allowed the company to strengthen its team and effectively manage the growing workload. The company has presently from 15 to 20 employees. Table 2 shows the company's revenue in the past two years. The company started to have commercial products from 2020 but due to the pandemic situation, the development is still limited. After the epidemic was controlled, the company's revenue had a breakthrough, and by the end of the fiscal year 2022, the

company's revenue has increased 263 percent compared to 2021. The company's 2023 target company quadrupled in revenue compared to 2022 (Tropic Thunder 2023.) Currency conversion will be provided with the following exchange rates: 1 EURO = 25,000 VND

Year	Revenue	Growth
2021	€31,597(789,934,500 mvnd)	
2022	€83,213 (2,080,334,205 mvnd)	263%

Table 2. The company's revenue (Ho 2023).

Tropic Thunder has implemented many marketing campaigns to promote its brand and products to potential customers. One of Tropic Thunder's marketing campaigns is to use social media channels like Facebook and LinkedIn to introduce the company's products and services to potential customers. The company also uses other online communication channels such as Google Ads and banners on websites to increase brand awareness and attract new customers. (Tropic Thunder 2023.)

In addition, Tropic Thunder also focuses on improving customer service by enhancing support and resolving customer issues quickly and efficiently. The company's marketing and branding activities were also enhanced to improve the company's brand recognition among potential customers and retain existing customers. (Tropic Thunder 2023.)

1.1.2 The products of Tropic Thunder

Tropic Thunder provides services related to system management, data storage, application development, and cloud services. Presently, the company has been selling more solutions such as centralized screen management, Multizone

background music sound, Multizone access control and automation store solution (Tropic Thunder 2023.)

Tropic Thunder's technology solutions include:

- A centralized screen management solution

Tropic Thunder's centralized screen management solution is a smart platform that allows creating and controlling the content on all screens from anywhere. With just a device connected to the internet, content can easily monitored and controlled instantaneously (Tropic Thunder 2023.)

- Multi-zone background music sound solution

Multi-zone background music solution is an intelligent IoT platform that allows users to control the intensity , source playback, and the area that plays the sound from speaker equipment in many other places simultaneously. (Tropic Thunder 2023).

- Multi-zone access control solution

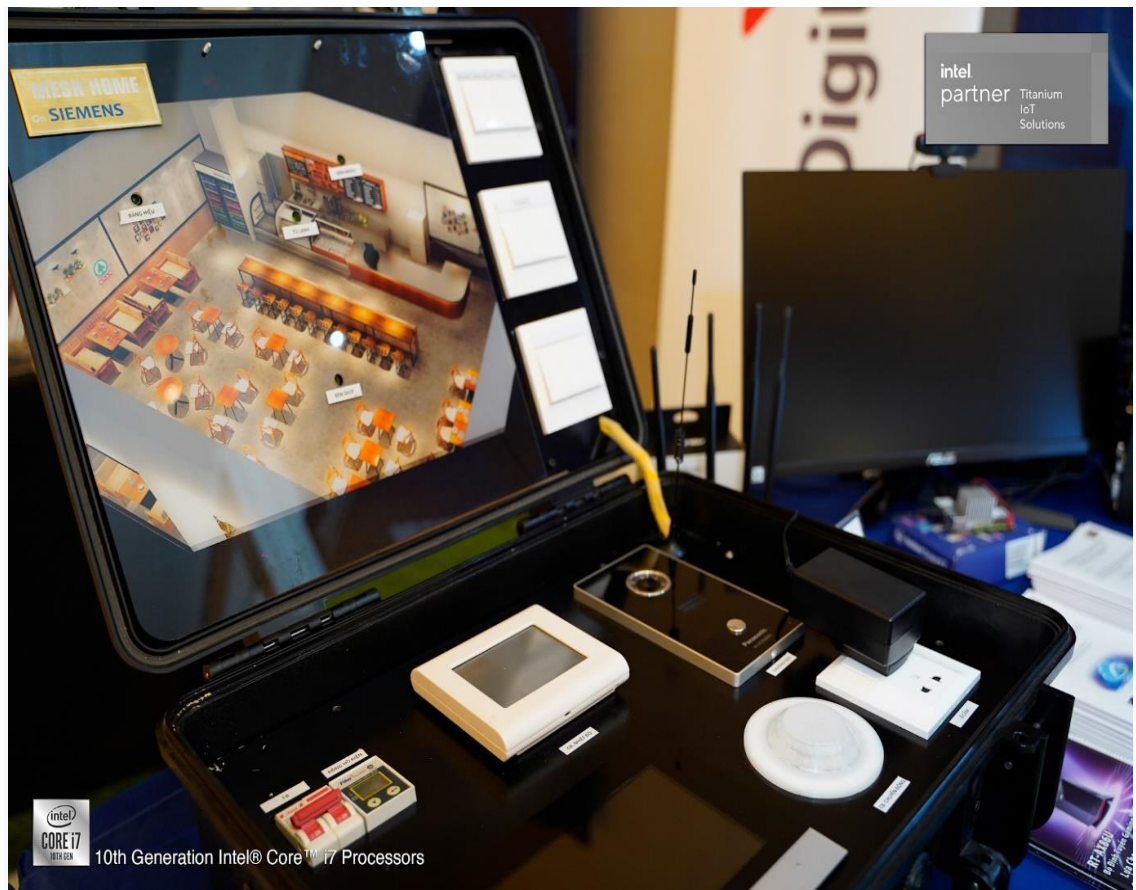
The access control solution is the system used to manage and collect information in the area that needs to be protected and monitored. Entry is possibly confirmed by a magnetic card, phone, password, AI camera, or scan QR code. Access information will be recorded on the system (time, status entry status). These pieces of information can be accessed as needed, helping administrators monitor security quickly and efficiently. (Tropic Thunder 2023.)

- Automation store solution

The solution offers integrated features for the efficient monitoring, management, and analysis of customer data, inventory, revenue, and website systems. The automation store solution ensures centralized management, AI applications, energy-saving features, and voice-activated commands, providing high-quality and flexible service for retail stores. (Tropic Thunder 2023.)

Picture 1 shows that the company introduced a new product at the Smart City AioT, and Digital Transformation Conference organized by ASUS, Intel and Western Digital. At this conference, Tropic Thunder launched a centralized

management solution for chain stores applying AIoT and digital transformation. Accordingly, this solution will focus on content delivery management including audio and video, electrical equipment operation management, energy monitoring, environmental status, and in-store equipment. The solution also supports incident alerts and automatically triggers actions according to scenarios, integrating AI technology to optimize operations, reduce time and costs. (Tropic Thunder 2023.)



Picture 1. AI Solutions in retail from Tropic Thunder (Ho 2023.)

According to Ho (2023), Tropic Thunder considers the importance of the quality of products and services, which plays a vital role in building the brand. The company is dedicated to continuously improving and enhancing its offerings by allocating significant resources. The team at Tropic Thunder consists of passionate individuals who work together to develop innovative products and solutions that address the current societal needs and contribute to a better quality of life. (Tropic Thunder 2023.)

1.2 Motivation and aim of the thesis

The global number of smart home devices is expected to surge from 349 million in 2020 to 1.77 billion shipments by 2025 (Statista 2022). Tropic Thunder is determined to expand its presence in the international market. A key contributing factor to its success on a global scale is its unwavering commitment to delivering exceptional products and services. The company's network solutions are strategically crafted to cater to the unique requirements of various industries, offering rapid and secure connectivity, robust data management, and effortless scalability.

In Finland, recent statistics indicate that the revenue in the smart home market is expected to reach US\$ 246.10 million in 2022. The annual growth rate is 11.31%, resulting in an expected revenue of US\$ 455.60 million by 2027 (Statista 2022.) That has created the opportunity and motivation for the author in this research project.

The research aims to investigate the potential market opportunities and challenges for smart home products. To achieve the goal, the study utilizes the PESTL model and the SWOT model. By exploring the business environment, the research provides a comprehensive plan and analyzes the associated risks for initiating a product business in Finland.

1.3 Comparison to other thesis

Based on the author's search information, there has been no business offering smart home products in Finland in recent years. This thesis aims to provide valuable insights for startups with new business ideas in the smart home industry. By analyzing the marketing mix, PESTEL, and SWOT, the research strategies for positioning products and navigating market opportunities. The findings will offer

practical perspectives and recommendations for startups to succeed in the unique smart home of Finland.

On the other hand, there are two theses related to understanding the potential of smart home development in the future. These theses provide significant contributions to the author in terms of ideas and business plans for new products.

The first thesis was about the business potential for smart home applications by Passi (2020). Smart home is a collection of smart devices to create a better, more cost-effective life. This thesis focuses on researching the potential of smart home businesses based on Internet of things technology and improving the quality of life of consumers, especially young people from 18 to 30 years old. The perceptions of young people in Finland show the attractiveness of smart homes in the future. Besides the interest of users in home appliances, entertainment and safety are also concerns regarding technological safety, such as data security and smart home privacy. Furthermore, Smart home applications should be simple, reasonable, compatible with other devices, and easily used through mobile applications or simple voice commands. (Passi 2020.)

The second thesis was about the business potential for Smart Homes by Lievemaa. Smart homes hold huge potential to change the way consumers live by creating comfort, safety, and energy savings in households. In addition, smart homes can provide care for the elderly, which is a problem with the aging population situation in Europe. This thesis aims to explore the potential of smart home businesses that utilize internet of things technology and enhance the quality of life for consumers, particularly young individuals aged 18 to 30. Smart home projects in this thesis refer to houses with connected smart devices that cost from €2000 to €10,000. The outcomes of this research suggest that participants are interested in using smart home technologies in their homes. These devices and tools increase the convenience of their home life. In addition, the safety of data control is also a concern for consumers to avoid the data can be accessed by third parties. The results of the thesis suggest that marketers should focus on offering the benefits such as energy saving, environmental protection, and reasonable prices of smart homes to consumers. The author

found that there were some shortcomings in the study such as a small focus group, and short interview duration, which affected the thesis. (Lievemaa 2018.)

The third topic is related to the fashion business in Finland. This is a thesis written by Martikainen in 2014 with the topic Business Plan for a New Online Clothing Store in Finland. Martikainen's thesis focuses on building a business plan, including an analysis of the marketing mix, the distribution model, as well as SWOT (Strengths, Weaknesses, Opportunities, Threats) and PESTEL (Political, Economic, Social, Technological, Environment, Legal) analyses. Martikainen's planning ideas are highly insightful and can serve as a valuable reference for the company's business plan. (Martikainen 2014.)

In summary, the three selected thesis have similar purposes to the author's topic of product sales in Finland. However, the restriction on the age limit when the survey was only for students at the university did not reflect clear visions of the product's future development among consumers. Despite this, the author has gained more experience in planning and selling products to find more potential customers in the future.

1.4 Focus and limitations

The primary aim of this thesis is to develop a comprehensive business plan for a startup company in Finland. The research is mainly based on gathering information from articles, reports, and customer interviews to understand the business environment and customer preferences in the Finnish market. The study aims to provide insights and recommendations for foreign entrepreneurs who are interested in setting up a business in Finland.

However, the study has some limitations that should be taken into consideration. Firstly, the study acknowledges the limitations of data collection, including a restricted sample size, which may impact the precision and applicability of the results. Secondly, smart home products are still new, and the prices are not yet

adjusted to the market. This may make it difficult to find customers in the initial stage. Furthermore, the study duration may not be sufficient to cover all the aspects and challenges of the business sector.

Despite these limitations, the study provides valuable insights and recommendations for foreign entrepreneurs interested in starting a business in Finland. The findings can be used as a reference to develop a business plan and understand the business environment in Finland.

1.5 Structure of the thesis

Chapter 1 is an introduction to the research. This chapter provides the reader with an overview of the study, as well as information on the history of Tropic Thunder and its products, which offer many features and benefits to consumers. In addition, the author's motivation and goals are introduced, plus a brief comparison with three other studies related to the topic to support the research. The final part introduces the scope and limitations of the study.

In Chapter 2, the author provides information on how to use Chat GPT in research and literature reviews. This section provides keywords that Chat GPT suggests, finds references through Google Scholar, and reviews references that support this research. These also involve a theoretical analysis of the relevance of the marketing mix, PESTEL analysis, and a SWOT analysis in relation to the author's research topic. In addition, business ideas for smart home products are introduced to guide the next five years, and a PESTEL analysis of the business is also introduced at the end of this chapter.

Chapter 3 is the research method. This chapter analyzes three research questions, and through these is formed a survey questionnaire. Qualitative and quantitative research methods are also provided in this chapter. Primary research is based on collecting answers from customer interview questionnaires.

Secondary research involves the use of data already collected by others. The final part reviews the ethics, reliability, and validity of this study.

Chapter 4 includes the research findings and the SWOT analysis. This section includes the presentation of data through bar and pie charts, addressing the research questions. Furthermore, it provides an interpretation of each survey response and conducts a SWOT analysis to examine the project's strengths, weaknesses, opportunities, and the threats that influence the business plan in the Finnish market.

The final chapter of the thesis comprises a discussion and conclusion. This chapter presents the study's findings and acknowledges limitations. In addition, the author shares insights and perspectives on the topic in the concluding discussion section at the end of this chapter. In this thesis artificial intelligence was used for planning, learning and grammatical assistance. Other uses are explained later in the thesis.

2 Literature review

2.1 Using Chat GPT

During my research on understanding and developing the Finnish market for smart home products provided by Tropic Thunder, I sought guidance from ChatGPT. ChatGPT played a crucial role in providing suggestions for relevant keywords and search terms. Through this collaboration, I was able to evaluate keywords such as the Finnish market for smart home, Tropic Thunder, consumer preferences, home automation, home security, and safe solutions. By utilizing these keywords, I conducted a thorough literature review, including references like the thesis by Maria Ageskov, *Perceived Barriers to Consumer Acceptance of Smart Home in The Finnish Market*. Additionally, I explored market analyses for smart home technology and considered the importance of consumer preferences

and home automation. Overall, ChatGPT proved to be an invaluable resource in enhancing the quality and comprehensiveness of my research on this thesis.

2.2 Describe topic to Chat GPT

The research focuses on the exploration and development of the Finnish market for smart home products, undertaken by Tropic Thunder. The company specializes in providing management software for stores such as centralized screen management solutions, multi-zone background music solutions, multi-zone access control solutions, and smart workplace solutions.

According to Chat GPT, the research topic on understanding and developing the Finnish market for smart home products provided by Tropic Thunder sounds interesting and relevant. It would be helpful to clearly define the objectives and research questions, as well as provide a detailed methodology for conducting the research.

2.2.1 Ask for relevant keywords and search terms

The Chat GPT provides the keyword and search terms for the projec. These include phrases such as smart home products, Tropic Thunder, Finnish smart home market, home security and safety solutions, energy efficiency in smart homes, home automation, smart workplace solutions, consumer preferences, market analysis for smart home technology and management software. These keywords serve as a foundation for conducting a comprehensive search and analysis of the chosen topics.

2.2.2 Evaluate keywords suggested by Chat GPT

The author noticed five keywords suggested by Chat GPT, such as the Finnish market for smart homes, Tropic Thunder, consumer preferences, home automation, home security, and safe solutions.

The Finnish market for smart home products keyword can refer to the fact that the product will be sold in the Finnish market. This is necessary to find out the needs of the Finns. This research will help the author to focus on selling and advertising products that are suitable for the tastes of consumers here.

The keyword Tropic Thunder will explain more about the Tropic Thunder, such as the field of operation size, year of establishment, and the company's products and services related to the research topic. This in turn may help readers better understand Tropic Thunder and ensure the research results can be applied to the topic.

The keyword consumer preference suggests focusing on gathering customer opinions regarding smart home products and solutions. Analyzing customer preferences allows for a deeper understanding of the market's needs and desires in relation to the product. This research helps the author and the company to find products and solutions that match the requirements of customers in the Finnish market.

The keyword home automation will be related to smart home automation solutions, a topic that the author needs to research in this topic. Researching smart home automation solutions is learning about the best and energy-saving automation solutions for the best user experience with the product.

The keyword home security and safety solutions analyze the importance of security and safety features in smart home products. Safety solutions such as alarm systems, security cameras, and automatic door locks will help find customers who want to change to new security solutions.

2.2.3 Use keywords and evaluate findings and choose best references

After conducting a Google Scholar search using the keyword Finnish market for the smart home product, the author found approximately 61,400 results. Among the above results, the author chose the result with the thesis by author Maria Ageskov (2019) called *Perceived Barriers to Consumer Acceptance of Smart Home in The Finnish Market*. This is a good reference for thesis research. The thesis provides a summary and analysis of the smart home market in Finland. The author has consulted this thesis and learned the data expression for the results part of this author's thesis.

With the keyword Tropic Thunder, the author refers to documents prepared by the company about the process of formation and development of the company. The company's products are certainly improved in accordance with the needs of customers and changes in technology keep up with the development of society.

With the keyword market analysis for smart home technology, there are about 3 million results. The article called *The development of smart homes market in the UK*, by Balta-Ozkan, Davidson, Bicket & Whitmarsh (2013) popped out. The article is a good reference, as it considers the priorities of the European Union's energy plans and policies in developing technologies and services for smart homes to provide Smart solutions for consumers. Smart homes satisfy consumer demand for home energy control and management and will drive the smart home market growth in the UK.

Consumer preferences keywords using Google Scholar show many results, but the results do not match the author's topic requirements. In the article by Denver and Jensen (2013) on consumer preferences for organically and locally produced apples, the author can refer to factors that determine the importance of product consumption such as income, education, and gender. These factors are

necessary for the survey questionnaire to determine the price of the product to reach potential customers.

Home automation was searched for and showed more than 4.3 million results. The author choose a summary of the auto house of two authors, Gunge and Yalagi (2016). This is a comparative paper among home automation systems based on web, email, Bluetooth, and phone. In the future, automation systems will improve to become smarter and faster and may be applied in many environments such as offices, factories, and schools.

In summary, keywords were searched on Google Scholar through Chat GPT's keyword suggestions. Authors can find documents relevant to their topics in this way. These documents are articles related to the smart home market and factors in consumer preferences. Through this section, the author can give accurate and reliable information for her thesis.

2.3 Marketing mix

Marketing encompasses various activities aimed at understanding and meeting the market's needs. These activities include organizing the sales force to sell the company's products or services and implementing promotional and advertising strategies to reach and attract customers. (Kotler, Armstrong & Opresnik 2018, 29.)

According to Kotler, marketing is the social and managerial process of creating, selling, and exchanging products of value to satisfy the needs and wants of individuals and organizations. (Kotler, Armstrong, Harris & He 2020, 6).

According to Buttle (1996), the American Marketing Association (AMA) defines marketing as the strategic process of developing and executing plans for product development, distribution, pricing, promotion, and sales. The ultimate objective of marketing is to facilitate the exchange of goods, ideas, or services in order to meet the needs and goals of individuals or organizations. (Buttle 1996, 2.)

The marketing mix represents a combination of marketing elements utilized by businesses to achieve business's marketing objectives within a specific target market. Furthermore, the marketing mix comprises a set of controllable marketing elements that the business organization consistently utilizes to meet the needs of a specific market segment and enhance profitability (Kolter et al 2020, 51). According to Majaro, the marketing mix represents the balanced interrelationship between a group of controllable components such as product, price, promotion, distribution, and sales. (Majaro 2012, 41.)

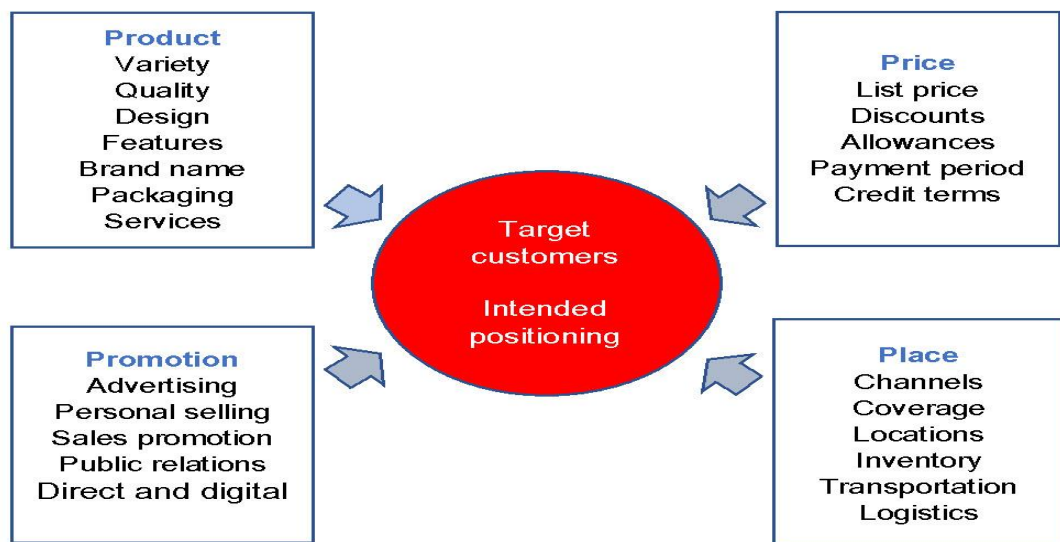


Figure 1. Marketing Mix based on Kotler et al. (2020).

A product refers to a tangible or intangible offering that forms a crucial part of a marketing program. The product policy and strategy serve as the foundation of the marketing mix. Without a product, it is impossible to proceed with other elements such as distribution, pricing, and advertising. If the product fails to meet

consumer demand, investing in improving the product's performance through the components of the marketing mix may not yield effective results or justify the associated cost. For marketers, having quality products is the key to achieving success in the marketplace. (Hundekar, Appannaiah & Reddy 2010, 49.)

Price is an issue of great importance to sellers and buyers in the market. Price represents the value of a product or service expressed in monetary terms. From the perspective of marketers, the price also includes the entire product offered in the market, the consumer is also purchasing the information through the sales advertisement, and the consumer receives these values and pays their costs. (Hundekar et al 2010, 77.)

Promotion is the process of marketing communication involving product information to consumers. Advertising persuades buyers to engage in this consumption behavior. Advertisements serve as a competitive tool to the marketing program that promotes the sale of goods and services. (Hundekar et al 2010, 103.)

The place where products or services are provided to customers is known as the distribution channel. It brings together various organizations and activities involved in the movement of goods and services from the producer to the end-user. In the consumer goods market, distribution channels play a crucial role in successfully implementing marketing plans and strategies. (Hundekar et al 2010, 166.)

2.4 Peste analysis

PESTEL analysis is a marketing tool that helps businesses understand how the current business environment may affect their operations. By considering various political, economic, sociocultural, technological, environmental, and legal factors,

businesses can identify potential opportunities and threats, and develop strategies to address those problems. (Oxford College of Marketing 2023.)

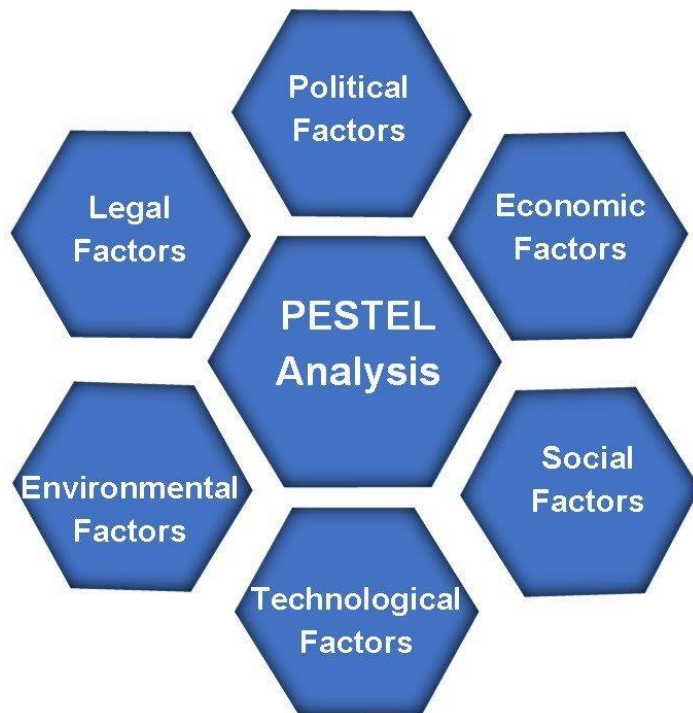


Figure 2. PESTEL analysis factors based on Professional Academy (2023).

Political factors

The political factor is a critical aspect that influences businesses within a specific jurisdiction. This is essential for businesses to stay vigilant and keep track of the dynamic political environment to proactively adjust their strategies and ensure compliance with governmental regulations. Trade policies, tax policies, labor laws and environmental regulations hold significant implications for business operations. Therefore, assessing and effectively responding to political factors becomes paramount for marketers (Professional Academy 2023.)

Economical factors

Economic factors include several factors to consider such as economic growth, interest rates, taxes, inflation rates, and changes in consumer spending. This is a combination of macroeconomic and microeconomic factors. Macroeconomic factors related to demand management in the economy such as tax policy, and interest rates. Microeconomic factors are related to people's spending and income. (Professional Academy 2023.)

Social factors

Businesses should better understand the needs and wants of products that can satisfy consumers in a social environment. These factors include age and population growth rate, age distribution, health consciousness, and occupational attitudes. (Professional Academy 2023.)

Technical factors

Technological factors include everything related to the level of science and technology businesses are using. This aspect is important to all areas of the manufacturing and distribution business. Businesses should apply technology to increase operational efficiency. (Professional Academy 2023.)

Environmental factors

In the current era marked by ecological crises and climate change, it is imperative for businesses to prioritize environmental considerations such as mitigating carbon emissions. Presently, there is a growing consumer segment that demonstrates keen interest in ethically sourced and environmentally sustainable products. (Professional Academy 2023.)

Legal factors

The legal aspect of business activities encompasses the utilization of laws and regulations in various operational aspects. When business expand into new markets, businesses must consider the laws of the respective country. Furthermore, it is crucial for businesses to adhere to legal requirements and regulations in order to operate effectively. This includes compliance with health and safety standards, adherence to consumer rights and laws, proper product labeling, and ensuring product safety (Professional Academy 2023.)

With the PESTEL model, it is a useful tool, providing information for companies to promote business economic growth. In addition, businesses apply this model to modify strategies to suit existing markets or develop strategies to enter a new market.

2.5 SWOT analysis

SWOT analysis is a strategic planning tool that evaluates the strengths, weaknesses, opportunities, and threats of a business or project. This is an essential model for any business plan. The model helps create an action plan based on the specific market situation. The purpose of SWOT analysis is to identify the internal strengths and weaknesses of a business that are pertinent in responding to external opportunities and threats. (Mariani 2017,40.)



Figure 3. SWOT based on Business Balls (2023).

Strengths and weaknesses are internal factors that reflect an organization's internal activities and resources. On the other hand, external factors refer to the external environment, including opportunities and threats. The SWOT analysis emphasizes the importance of leveraging strengths and opportunities while addressing weaknesses and threats. It suggests that business should focus on developing company's strengths and capitalizing on opportunities, and actively working to overcome weaknesses and minimize potential threats. (Pestleanalysis Contributor 2020.)

Based on the results of the analysis, businesses can assess the viability of new projects and allocate additional resources to ensure succeed. (Pestle Analysis 2023).

Using the restaurant industry as an example, a restaurant has been open for a long time, that restaurant has a strong point of customer relationship and satisfaction. However, the weakness may be that the old business model cannot meet the competition from expanding restaurant chains such as delivery or takeout services. Finally, there is the potential threat of another restaurant serving the same food and a similar clientele. (Spider Strategies 2022.)

2.6 Smart Home products in Finland

The smart home market is growing, and Finland is considered the most advanced country in this field. With a solid economic situation, modern industry, and a sustainable living environment. Finland promises to be a potential market for the establishment of a new company dealing in smart home products. However, before embarking on business, a PESTEL analysis is necessary to assess the main factors affecting the establishment and development of a company in the Finnish business environment.

2.6.1 PESTEL Analysis

Political factors

Finland, as a Nordic country and a member of the European Union, is officially known as the Republic of Finland and operates under a representative democracy. The Prime Minister holds a position of significant influence within the country. Finland is known for its stability, which is influenced by various factors, including the level of fear experienced by its citizens. In a country with a lower level of fear, individuals can lead lives that are free from worry and stress. (David 2023.)

The Corruption Perceptions Index is a research product of Transparency International. This index provides an annual overview of the corruption levels of countries. Finland ranks among the top countries for avoiding corruption, which speaks to the purity of the Finnish government system. (Transparency International 2023.)

Economic factors

Finland's economic growth is relatively stable, according to Trading Economics 2023, the Gross National Product (GDP) was US\$297.30 billion in 2021 (The World Bank 2021). Finland is ranked fourth on the list of the most prosperous countries in the world in a ranking of 167 countries. However, Finland needs to improve in terms of economic quality compared to governance and investment environment. (Legatum Institute Foundation 2023.)

The information and communication technology sector employs 6.8% of the Finnish workforce, with a significant portion working in software businesses. According to Privacy Shield, the Finnish Government has dedicated over \$451 million to support digital initiatives focused on digitizing government services. The objective is to enhance the e-government infrastructure and foster a digitally advanced economy. (Privacy Shield 2023.)

In addition, Finland has developed a business infrastructure with a corporate tax rate of 20%, one of the lowest in the European Union, compared to the European Union average of 21.9%. (Saldo 2023).

Social factors

Finland has a population of more than 5.5 million people, with an average life expectancy of 82 years a high GDP per capita of about 53,654 US dollars in 2021, providing people with a high standard of living. However, Finland faces a labor shortage because of its aging population. (The World Bank 2023.)

In addition, Finland is famous as a country with the best education system: all Finnish citizens can study for free from primary school to higher degrees. In addition, the cost of studying for foreigners is also relatively cheap compared to countries like the US and Canada, so Finland is an attractive destination for

everyone. The number of immigrants in 2021 was about 14,928. (The World Bank 2023.)

Technological factors

Finland is a developed country in technology with many titles and typical technology products such as Nokia phones, 5G technology, and heart rate monitors. Finland is also developing advanced technologies such as artificial intelligence while promoting the use of clean energy and protecting the environment. Finland is actively fostering new business opportunities across various sector. The country's vision is to establish itself as a global leader in sustainable development, with a particular focus on poverty reduction, healthcare, education, energy, and gender equality initiatives. (Business Finland 2022.)

In contrast, Finland has set an ambitious goal to become a global leader in communication networks by 2025, as announced during a 2019 government conference. The country's impressive digital performance is evident the second-place ranking in the EU Digital Economy and Society Index (DESI), which assesses digital competitiveness and capabilities. This achievement can be attributed to Finland's exceptional digital public services, seamless integration of digital technologies, and robust collaboration between the public and private sector to support the thriving startup ecosystem. Finland boasts extensive 4G coverage reaching 99% of the population and 70% coverage for 5G households. With 154 mobile broadband subscriptions per 100 individuals, and 76% of the population possessing basic or advanced digital skills, Finland has positioned itself as a digitally advanced nation. Furthermore, 67% of the country is 5G ready. The industry has played a significant role, employing 77,000 individuals and generating a revenue of \$16.5 billion in 2019. Finnish companies have embraced digitalization, with 19% utilizing big data and 75% utilizing the cloud services. Additionally, these companies are actively exploring the potential benefits of 5G technology, automation, and AI. (International Trade Administration 2022.)

Environment Factors

Finland is famous for being rich in natural resources with its vast forests and many lakes. However, the cold and long winter is a challenge for the locals. In addition, air, water, noise, and climate change pollution is an environmental challenge facing Finland. (David 2023.)

Legal factor

Finland's democracy system is firmly grounded in the principles of the rule of law, as outlined in its constitution, which forms the bedrock of the nation's governance. The rule of law ensures that all government bodies operate within the confines of legal boundaries, uphold democratic values, safeguard fundamental rights, and are subject to impartial judicial supervision. As a member of the European Union, Finland is dedicated to upholding European principles and fulfilling its responsibilities under international agreements. (Ministry of Justice Finland 2023.)

According to David (2023), Finland as a legally qualified country reports no serious prosecution problems so people can live freely without worrying about being harmed. The Ministry of Justice describes Finland as a democratic nation that upholds the principles of the rule of law, respects fundamental rights and human rights, and promotes sustainable judicial administration. (Ministry of Justice Finland 2023.)

2.6.2 Business Idea

Starting a new business is a challenge for startups and fresh graduates who do not have much working experience or investment research and business information connections. A business idea can be understood as an idea about a business activity. To be successful, business ideas must create new and different

values in products, which will create opportunities for success when entering the market.

According to Grand View Research, the global smart home market was valued at approximately \$62.69 billion in 2021 and is projected to grow 27.04% from 2022 to 2030. In Finland, the smart home market is also expected to witness substantial growth. By 2022, the revenue is projected to reach \$246.10 million, with a CAGR of 11.31% from 2022 to 2027, resulting in a projected market volume of \$455.6 million by 2027. The number of active households using smart home devices is expected to reach 1.597 households by 2027, with household penetration increasing from an average of 19.4% in 2022 to 56.4% in 2027. The average revenue per installed smart home in Finland is projected to be \$460.4. Finland's smart home market revenue is not as high as that of the United States, which is still expected to experience significantly growth in the upcoming years. (Statista 2023; Grand View Research 2023).

The company has set a goal to become a product trading enterprise in Finland within five years. The author believes that the company can establish a strong position in the market. In the first two years, the company will focus on understanding the market, training its human resources, consolidating, and validating its products, as well as implementing a security regime suitable for the market. The company will also engage in propagating and advertising its products on various websites. Additionally, the company needs to concentrate on customer engagement, marketing, and awareness of its product.

In the third year, the company is expected to participate in various events and exhibitions on smart products and solutions to attract potential customers. Over the following two years, the company will continue to develop products that enhance quality and affordability and provide better user experiences. As an example of the company's current collaboration, the author is working with the restaurant owner Torikulma to design a centralized screen management system for the restaurant.

Overall, the company's success in the Finnish market depends on its ability to adapt to the local business environment, understand customer preferences, and develop products that meet their needs. The company's willingness to invest time and resources in building customer relationships and engaging in marketing and advertising activities will be key to its success.

3 Methodology

In this section, I present the methodology employed in my thesis. Subsequently, I delve into the core research questions that are essential for my survey.

3.1 Research questions

I aim to gather insights from individuals in Finland regarding smart home products. The survey questions encompass various aspects, including the utilization and selection of smart home products, the key functional requirements, methods of product control, and the target user base.

Research questions are the questions that a study or research project poses and aims to answer. These questions are focused on issues related to the problem at hand and how data analysis and interpretation can be used to solve it. (Bouchrika 2023.)

In addition, the question writer must plan for the most useful analysis. The questions should ensure that the primary analytical group is identified. The sub-questions are intended to understand the key measures. (Brace & Bolton 2022, 10.)

The author has focused on three research questions in the section.

The first question is “Who is the potential audience for smart home products?”

The second question is "Are people in Finland willing to use smart home products to help you solve problems in your daily life?"

The third question is "What security and safety features of smart home products are people interested in in Finland?"

3.1.1 Question 1: Who is the potential audience for smart home products?

The first research question aimed to collect information about users' opinions of smart home products by age group. The author can objectively evaluate and improve the business plan by gathering answers to this question. Furthermore, this question offers a holistic perspective on market dynamics and customer requirements, allowing the author to tailor products accordingly.

3.1.2 Question 2: Are people in Finland willing to use smart home products to help you solve problems in their daily life?

The second research question aims to determine the level of willingness of people in Finland to utilize smart home products to assist with problem-solving in their daily lives. By collecting data on this topic, the author can gain insight into the potential market demand for smart home products in Finland and use this information to improve product design and marketing strategies.

3.1.3 Question 3: What security and safety features of smart home products are people interested in in Finland?

The final research question aims to identify the safety and security features of smart home products that are of interest to people in Finland. By collecting data on this topic, the authors can improve the design and marketing strategies of their products to better meet the needs of potential customers. This information can also inform the development of new smart home products that align with consumer preferences.

3.2 Methods

Research methods refer to the techniques or processes employed to gather, process, and analyze data in the research process (Question Pro 2023). These methods are crucial for graduate students to obtain accurate and reliable results. There are different types of research methods, including primary and secondary research, which involve either collecting original data or utilizing existing datasets. Understanding and applying appropriate research methods is essential to ensure the validity and reliability of research findings. (Scribbr 2023.)

Primary research is a data collection method that relies on firsthand data rather than preexisting data. Primary research can involve surveys with a longitudinal study design, more often used to complement or enhance secondary research. The questions in primary research are typically exploratory, aiming to investigate a research question without prior knowledge. A survey is a suitable choice when the research topic involves examining the characteristics and opinions of a specific group of individuals. (George 2023.)

In contrast, secondary research involves using data that has been previously collected by others for research purposes. This method is often used as an alternative to formal data collection and can be employed for data exploration and mining prior to conducting primary research. However, if gaps or limitations are identified in the secondary data, it is an indication that primary research is necessary. Secondary research is typically explanatory and focused, aiming to investigate the causal relationship and effects of a well-defined problem. (George 2023.)

The current study utilizes both primary and secondary research methods to answer the research questions. A survey is used as the primary research method to collect quantitative data from a sample population. The survey will be designed to gather information on the potential audience for smart home products, as well as people's willingness to use smart home products to solve problems in their

daily lives. On the other hand, a literature review is used as the secondary research method to collect and analyze relevant information currently available on the research topic. This will involve reviewing documents through databases such as using marketing mix, and PESTLE and SWOT models to explore different aspects of the research problem. The study aims to provide a comprehensive understanding of the research problem and explore its different aspects using both methods.

3.2.1 Method for research question 1

The research method used for question 1 was a survey. A survey is a primary research method that involves collecting data directly from a sample population. In this case, the survey was used to collect data on the potential audience for smart home products and their preferences for these products. The survey was conducted through an online questionnaire. Surveys are a valuable research method due to their ability to gather a substantial amount of quantitative data within a relatively short timeframe.

The first question focuses on personal information such as age. This information can help the author predict the likelihood of the participant using technology in the future.

Interview question	Purpose
Which of the following groups do you think is the potential audience for smart home product?	Identify the potential audience for smart home products

Table 3. Potential audience for smart home products analysis.

3.2.2 Method for research question 2

The research method for question 2 could also include a survey with the aim of gathering data about people's willingness to adopt smart home products to solve problems in their daily lives, as well as the factors that could impact their decision including pricing. The survey can be conducted with 12 questions. Another research method that could be used is observation, where the author could observe people's behavior and interactions with smart home products in their daily lives to gain insights into their willingness to adopt such technology.

Interview question	Purpose
How likely are people in Finland to adopt smart home products to improve their daily lives, and what other factors may impact their decisions? Please select the option that best describes your opinion.	To explore Finns' abilities to use smart home products to improve their daily life and to identify the factors that may impact their decision to adopt or not.
Which of the following technical solutions do you prefer in controlling smart devices in your home?	To determine the preferred technical solutions for controlling smart home devices among potential users in Finland.
Do you have a wireless internet connection at home?	To determine if customers have a wireless internet connection at home, which is a necessary requirement for using smart home devices.
Are you interested in new technologies?	The level of interest in new technologies among potential users in Finland
Do you have a smart home device in your home?	Collect information about smart home products that customers are using
If you answered yes or maybe, what smart home device do you have at home?	To collect information on the types of products owned by respondents, which may help identify popular devices and features that are preferred by potential users in Finland.

You do not have smart home technology in your home right now, can you tell me why?	To collect the reasons, customers do not like to use the product
What new features would you like to see in the future smart home products?	To identify potential features for improvement and look for new features that users would like to see in the future.
Do you want a fully automated home?	The level of interest in a fully automated home among potential user
How much would you pay to upgrade the intelligence of your existing home by buying more smart devices?	The willingness to pay for the product that the user can buy
How much would you pay for smart home features if you bought a home?	The price sensitivity of users when purchasing a new home.
Will you invest in smart technology in the next 5 years?	Predict future users thereby investing in technology development.

Table 4. Research methods for assessing willingness to adopt smart home products.

3.2.3 Method for research question 3

One possible research method for question 3, which focuses on understanding people's preferences for specific features of smart home products, would involve bringing together a group of individuals with diverse backgrounds and experiences related to smart home technology and facilitating a discussion about the most important features of smart home products to them. Another research method that could be employed is a survey, which could gather data on the features that people consider to be most important in smart home products. Additionally, a marketing campaign could be conducted to raise awareness about the benefits of smart home technology and the specific features that people may be interested in. This campaign could involve targeted advertising, and social media outreach to help people make more informed decisions about which smart home products to purchase.

Interview question	Purpose
Would you be interested in the security and safety features of smart home products?	To determine interest in security and safety features of smart home products.
What features of smart home products are most important to you when considering purchasing them for your home in Finland?	To identify the most important features people consider when purchasing products.

Table 5. Research methods for investigating preferences for smart home product features.

3.3 Data Sources

In conducting market research for the Smart Home business project, the author employed two data collection methods to gather information about the market. The first method was an online survey, which was conducted through an online questionnaire posted on various social networks related to smart homes and technology. The questionnaire was distributed to both Finnish and Vietnamese participants who are familiar with technology and have an interest in smart home products. The author selected social networks that are popular and have a diverse user base, from local residents to tech enthusiasts from around the world. By targeting these groups, the author aimed to gather data from a diverse range of perspectives, which would increase the reliability of the results. The online survey method is a useful research method because it can provide a large amount of quantitative data in a short period of time.

These are three typical companies to research on smart home products. A d-link company provides smart home products including security cameras, controllers,

network devices, and other devices. Cozify company provides diverse smart home solutions including smart led lights, controllers, and security systems. Most notably, Digisähkö provides a wide range of smart home products and solutions, including sensor systems, security devices, and controllers. In addition, the company also provides more information on how to use and install smart home products. The company's smart home solutions closely resemble the author's smart home project.

By combining two methods, the author aimed to obtain a comprehensive understanding of the market for smart home products. The information would inform the development of the smart home business project. In conclusion, the use of both primary and secondary research methods was appropriate and effective in collecting both quantitative and qualitative data about the smart home market, ensuring a thorough analysis of the data.

3.4 Data analysis

In the data analysis phase, the author conducted an analysis of the dataset to identify trends and draw conclusions based on the collected information. Data analytics technologies and techniques are widely used in business sectors to support informed decision-making. Data analysis projects offer significant benefits to business, including increased revenue, enhanced operational efficiency, and improved customer service. (Stedman 2023.)

Data analytics can be categorized into two types: quantitative data analysis and qualitative data analysis. Quantitative data analysis involves examining numerical data with measurable quantitative variables using statistical methods. On the other hand, qualitative data analysis focuses on analyzing non-numerical data to identify patterns and gain insights. Data analytics applications involve more than just data analysis, especially in projects that require data collection, integration,

preparation, development, testing, and modification of analytical models to ensure accurate results. (Stedman 2023.)

In the data analysis section, the author utilized charts such as bar charts and pie charts to visually represent the number of participants selecting answers in the questionnaire. These charts provided a clear visualization of the participants' interest in smart home products.

Visual representations are valuable in facilitating the understanding of data. When charts or figures are effectively utilized, the thesis can effectively highlight trends in reports or presentations. For instance, a pie chart is useful for comparing the proportions of different categories in relation to the whole. Each segment of the circle represents a specific category within the overall data. On the other hand, a bar chart utilizes the height of the bar to represent the measured value, where a longer bar indicates a larger value. (Mind Tools 2023.)

All data is analyzed through the surveyor's responses and the survey team of potential customers who are using smart home products. In addition, the price comparison section of suppliers helps the author to obtain a price for the survey by finding out the price the surveyor can buy with in the future.

3.5 Ethicality, validity, and reliability

In the process of collecting and using data for the topic, I have ensured correctness, reliability, and ethics. Data sources are obtained from government websites, books, and reliable statistical reports. All facts presented in the thesis are cited and fully mentioned.

Ethics refer to an individual's or organization's personal code of conduct, which is rooted in respect for oneself, others, and the environment. Ethics is guided by the principles or assumptions that dictate how individuals or organizations should behave. Research ethics pertains to the application of fundamental ethical principles to research activities including design and experimental research, respect for society and others, use of resources and research results, scientific misconduct, and research regulations. (Stirling University 2023.)

In this study, the author ensured that there was no harm to the survey participants. Prior to conducting the survey, all participants were informed of the purpose of the survey, which was clearly stated in the survey introduction. The author also informed the participants that their responses would be used for analysis in the author's thesis and research project and obtained their consent for participation. To ensure the privacy of the participants and the company involved in the study, all data and information collected were kept confidential and securely stored. The company's operations were not disrupted in any way during the research activities. In addition, the author checked the accuracy of the data and information collected to ensure that there was no deception during the research survey. Overall, the author adhered to ethical standards throughout the research process to ensure the validity and reliability of the study results.

The validity of a research study refers to the degree to which the findings and conclusions are based on accurate information. To ensure validity, researchers must use appropriate tools and techniques to collect data, while minimizing the influence of irrelevant information and external factors. Valid research results in reliable and reproducible data. (Heath 2023.)

In this project, the author used various methods such as interviews, surveys, and data analysis to collect information, ensuring the validity of the study. The collected data contributed to the overall goals of the research, and the results are expected to be useful for the author's business development. However, due to the limited number of survey participants and the lack of access to the local population, the data may not be generalizable to other companies in Finland. As

such, the findings of this study should be interpreted within the context of the study's limitations.

Reliability refers to the consistency of a measurement method. If similar results can be obtained consistently using the same methods under the same circumstances, then the measurement is considered reliable. Reliability should be considered during data collection: when a researcher uses a tool or technique to collect data, it is important that the results are accurate and stable (Middleton 2023.) In this research project, the author designed and conducted interviews carefully based on the knowledge learned. The data collected from the interview is the author's actual data, thereby improving the reliability of the project. The data and information collected from the survey were checked carefully to avoid errors and the questions were adjusted to fit the study before being sent to the surveyors.

In conclusion, the author of this thesis has also accumulated a considerable amount of knowledge and experience in this field through observations, internships, family, and related relationships. Therefore, the author believes that the thesis is conducted and evaluated reliably and correctly based on the skills and knowledge applied to support the theories presented in the thesis.

4 Results and SWOT analysis

The survey was conducted using Google Forms and included 25 participants. The author designed clear questions to avoid confusing participants, who varied in age, occupation, and country of origin, but currently live and work in Finland. The survey results were used to gain insight into the needs of the project's clients and will be presented in this chapter. Additionally, a SWOT analysis was conducted to analyze the strengths, weaknesses, opportunities, and threats of the product's business plan in the Finnish market. The results of this analysis are also included in this chapter.

4.1 Results of Interview for research question 1

The first question of the survey asks about the age group that would potentially be interested in purchasing the smart home product. Based on Figure 4, the data indicates that many potential customers for smart home products fall within the age range of 35-45 years old, with 72% of respondents selecting this option. The second most interesting age group is young adults aged 18-34, with 64% of respondents selecting this option. Families with children come in third place, with 44% of respondents indicating interest. However, it is important to note that while fewer singles and older people showed interest in smart home products, there still exists some potential audience within these groups. Additionally, the other category may include various potential audiences that were not explicitly listed in the options.

1. Which of the following groups do you think is the potential audience for smart home products?
25 responses

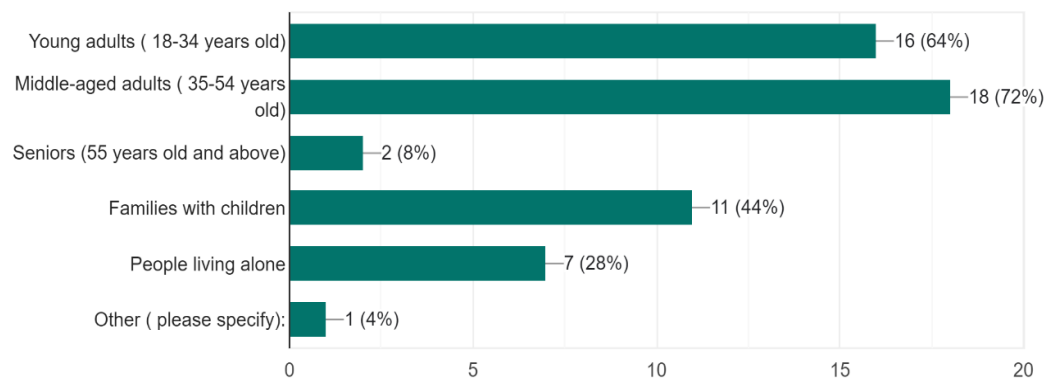


Figure 4. Age of potential audience.

4.2 Results of interview for research question 2

Question 2 asked about the readiness of smart home product users in daily life. Figure 5 highlights that a significant 60% of respondents indicated they like using smart home products to solve everyday problems, while 8% of respondents do not like products and 28% of users are unsure whether a smart home product can help them solve their problems.

2. How like are people in Finland to adopt smart home products to improve their daily life, and what other factors may impact their decision?, Please select the option that best describes your opinion.

25 responses

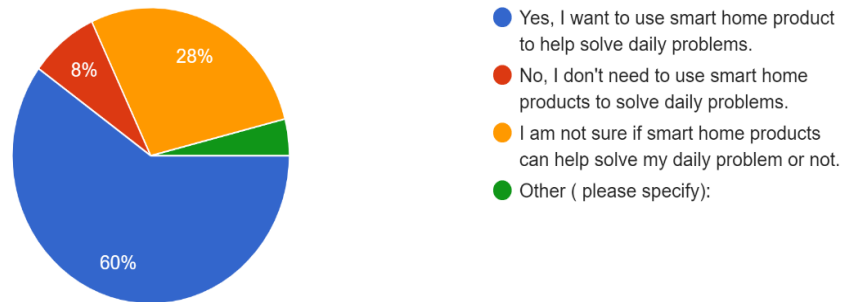


Figure 5. People adopt smart home products.

Figure 6 shows that the most popular feature among the respondents is the smart lighting system with 28%. Home security systems and energy-saving features are also highly rated at 24%. In contrast, only 8% responded with a preference for home entertainment systems. In contrast, a voice control assistant was considered important by 16% of respondents. There is no answer for smart thermostats, which suggests that they may not be popular among consumers.

5. Which of the following technical solutions do you prefer in controlling smart devices in your home?

25 responses

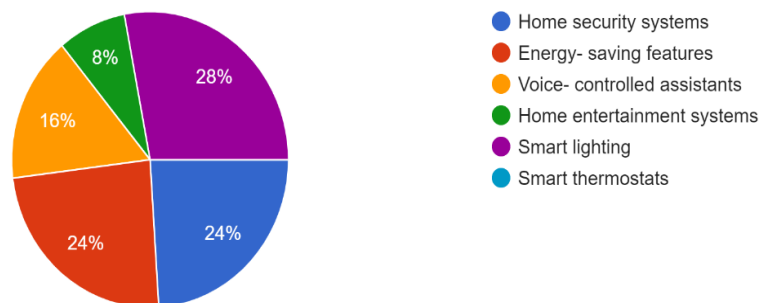


Figure 6. Technical solutions.

Figure 7 shows many respondents, 93%, have a wireless internet connection at home, indicating that access to the internet is not a barrier for potential smart home product users in this market. Only a small percentage, 4%, responded with "No", suggesting that there may be some individuals who do not have access to

wireless internet or may not be interested in using smart home products that require an internet connection. The remaining 4% responded with “Maybe”, indicating that they may not have a wireless internet connection currently but are potentially open to the idea of getting one in the future.

6. Do you have a wireless internet connection at home interested ?

25 responses

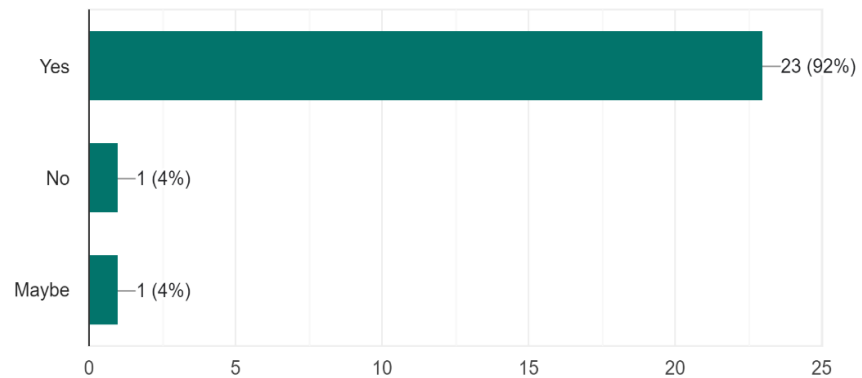


Figure 7. Wireless internet connection at home.

According to Figure 8, 76% of respondents said they are interested in new technologies. This shows the level of interest and willingness to accept new products in the market. Only 4% of respondents expressed disinterest in new technologies.

7. Are you interested in new technologies?

25 responses

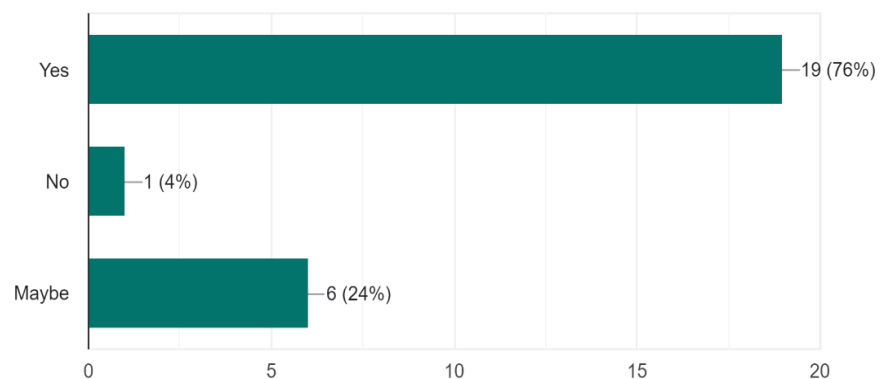


Figure 8. Interested in new technologies.

Figure 9 shows that 52% of respondents indicated that they have a smart home device in their home, while 36% do not have any smart home devices. The remaining 12% were unsure or undecided about whether they have a smart home device.

8. Do you have a smart home device in your home?

25 responses

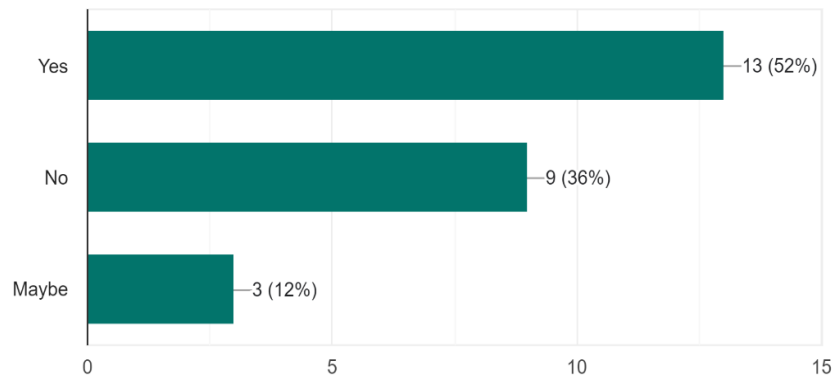


Figure 9. A smart home device in your home.

Figure 10 is the data shows that the most popular smart home device among the surveyed individuals is the smart light system, voice control system, smart devices to monitor power consumption with 33%, 26% and 20%, respectively. On the other hand, smart security devices, smart temperature control systems and cleaning aids received a lower level of interest, with 7% of the respondents.

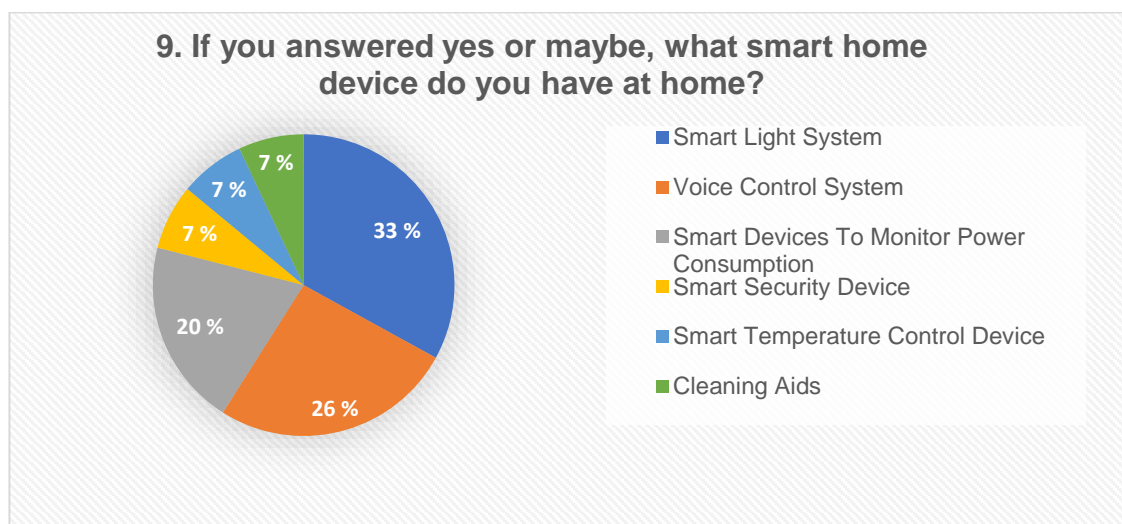


Figure 10. Smart home devices of 15 respondents.

According to Figure 11, the most common reason for not having smart home technology was the cost, with 58.8% of respondents indicating that it was too expensive. Another 23.5% expressed concerns over the security of smart home devices. Additionally, 17.6% felt that smart home technology was no longer needed or realistic for their lifestyles.

10. You do not have smart home technology in your home right now, can you tell me why?

17 responses

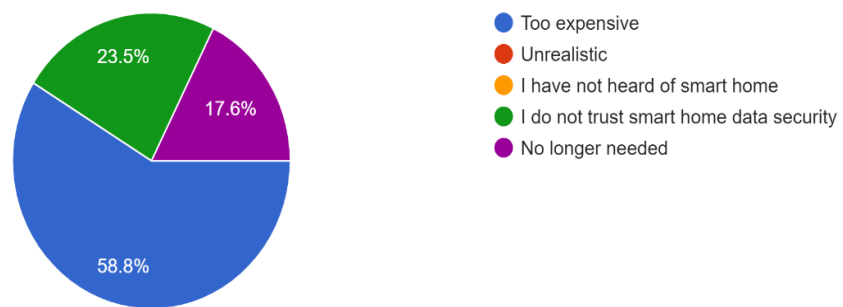


Figure 11. Reasons for not having smart home technology in respondents' home.

Figure 12 shows that more advanced automation features have the highest percentage with 32% and the better integration with other smart devices, enhanced energy- saving capabilities have 24%. The last one was improved security features at 20% of respondents.

11. What new features would you like to see in the future smart home products?

25 responses

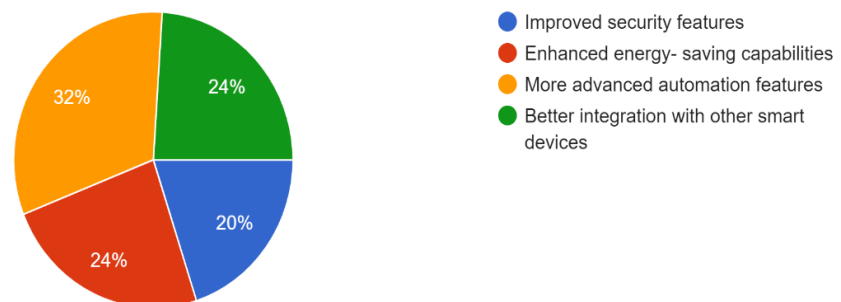


Figure 12. Future smart home features.

Figure 13 shows that 32% of the respondents disagreed with the idea of having a fully automated home, while 40% of them were neutral, and 28% agreed with the idea.

12. Do you want a fully automated home?
25 responses

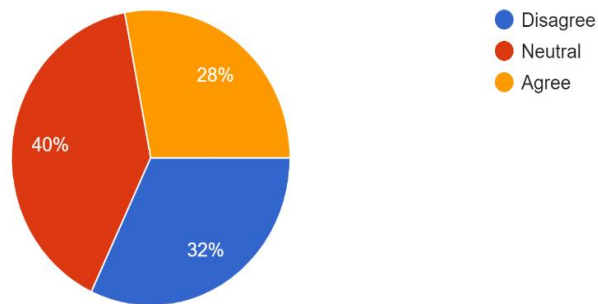


Figure 13. Attitudes towards fully automated homes.

Figure 14 shows that, the number of respondents willing to spend between 0 and 500€ is the highest with 48%. The second and third are between 500 and 1000€ and over 2000€ with 28% and 16%, respectively. Only 8% of the respondents would be willing to spend between 1000 and 2000€.

13. How much would you pay to upgrade the intelligence of your existing home by buying more smart devices?
25 responses

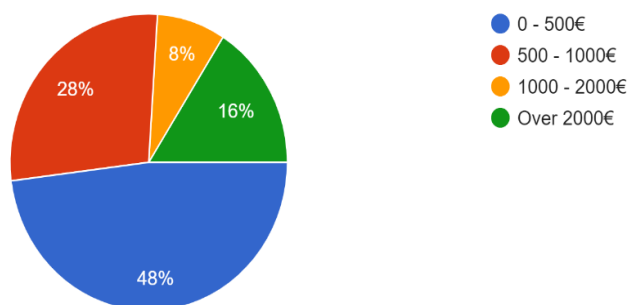


Figure 14. Cost of upgrading home intelligence with smart devices.

Figure 15 shows that the percentage of respondents would pay from 0 to 2000€ is the largest percentage (60%), while 28% of respondents indicated that they

would pay between 2000€ and 5000€, and only 4% said they would pay between 5000€ and 10000€. Finally, 8% of respondents said they would pay over 10000€ for smart home features.

14. How much would you pay for smart home features if you bought a home? (estimate)

25 responses

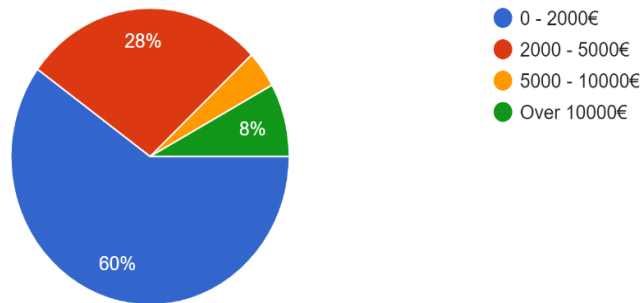


Figure 15. Estimated cost for smart home features.

Figure 16 indicates that a significant portion of respondents are open to investing in smart technology within the next 5 years, with 48% expressing definite interest. Additionally, 40% are uncertain about their future investment, suggesting potential interest. Only 8% of the respondents have stated that they do not intend to invest in smart technology during the next 5 years.

15. Will you invest in smart technology in the next 5 years?

25 responses

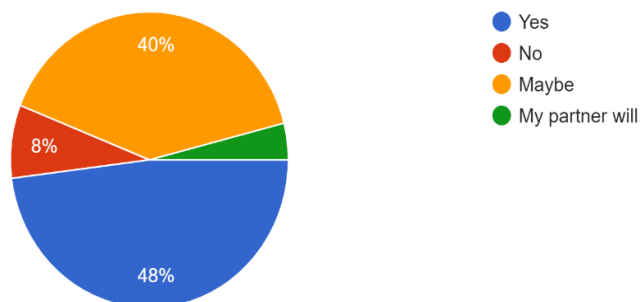


Figure 16. Investment in Smart technology in the next 5 years.

4.3 Results of interview for research question 3

The survey results with two questions focused on survey participants' preferences for product features. Figure 17 shows that 88% of respondents chose security and safety features as important, while only 12% of respondents did not prioritize these features.

3. Would you be interested in the security and safety features of smart home products?

25 responses

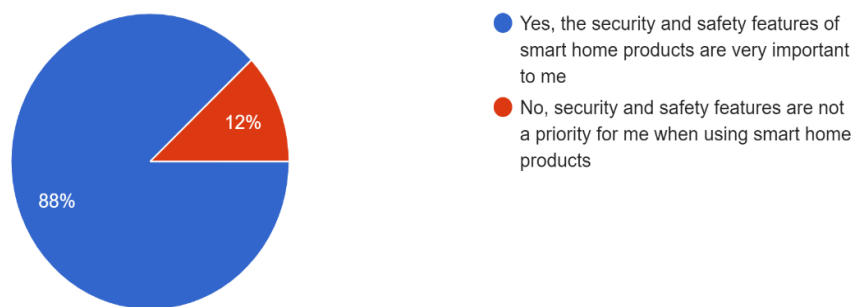


Figure 17. The security and safety features of smart home products.

Figure 18 shows the important features are remote control via mobile app, security features such as cameras, compatibility with other devices and customization options are the highest percentages with 80%, 68% and 64%, respectively. Participants also choose for energy efficiency, and integration with home entertainment are 60% and 56%, respectively. The two options such as voice control and ease of installation and setup were chosen by 40% of participants. The lowest percentage of respondents is design and aesthetic appeal with 32%.

4. What features of smart home products are most important to you when considering purchasing them for your home in Finland?

25 responses

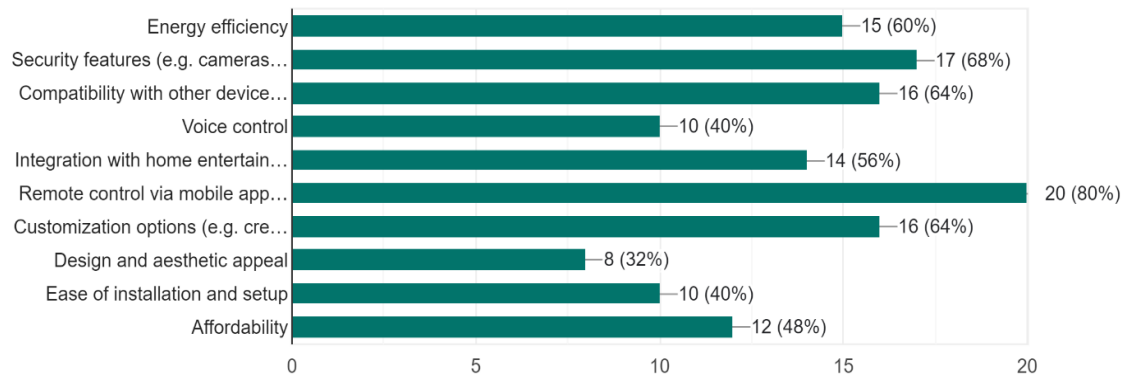


Figure 18. Important features of smart home products.

In summary, the survey results indicate that there is significant interest in smart home products among the 18 to 45 age group and families with young children. Based on the survey, the author found that many participants preferred smart home features such as remote control via mobile app, camera security, smart lighting systems, energy efficiency. Price is also an important factor affecting consumers' decision to buy smart home products. The survey results provide insight into the features consumers want to see in future smart home products. The author also collects necessary information for the project's business plan.

4.4 SWOT analysis

Table 6 provides an analysis of the strengths, weaknesses, opportunities, and threats for the business plan of Tropic Thunder.

Strengths	Weakness
Advanced technology and a young staff Diverse partner channels	Limited business staff and technical resources Decreased luxury brand market. Cost of system and recurring fees
Opportunities	Threats
Constantly innovating technology Increasing use of mobile devices	Many competitors with many years of experience. Rising inflation affects product prices

Table 6. SWOT analysis.

Strengths

Strengths refer to internal factors, which are available resources and experience (Schooley 2023). Strengths describe what the organization excels at and what sets it apart from the competition, such as strong brands and unique technologies (Kenton 2023).

There are many companies that specialize in providing products and software for smart home products. The smart home product project has two outstanding strengths: advanced technology and young staff, helping to ensure that the product is always updated and developed according to the latest trends. Besides, diversified partner channels are also an important advantage to enhance the product's presence in the market.

Weakness

Weaknesses are characteristics of the company's organization that need to be improved, including its people, resources, systems, and processes, in order to avoid potential problems. (Mind Tools 2023).

The smart home product project has several weaknesses that need to be addressed. The limited business staff and technical resources can result in slower

product development and lower product quality. Additionally, the cost of the system and recurring fees could make the product less affordable for customers on a lower budget. Addressing these weaknesses is crucial to ensure the success of the smart home product in the market.

Opportunities

Opportunities are opportunities for something positive to happen, they often arise from situations outside an organization and need to be mindful of what happens in the future. The ability to spot and exploit opportunities can make a big difference to an organization's ability to compete and lead the market. (Mind Tools 2023.)

For the smart home product project, there is a good opportunity for technological innovation in the smart home industry. This can create new features and benefits for a product and the use of smart home devices today. In addition, it is possible to make the product more accessible and convenient for users. By taking advantage of these opportunities, smart home products can stay competitive and attract new customers.

Threats

Threats refer to elements that have the potential to cause harm to an organization (Kenton 2023). Threats include anything that could negatively affect the business from the outside (Mind Tools 2023).

For the smart home product project, the two major threats are the appearance of many competitors with many years of experience in the smart home field, making it difficult for the product to stand out and gain a market share. In addition, rising inflation can lead to increased production costs and higher product prices, which can make products less attractive to customers, especially those on tight budgets. It is important for the project team to carefully monitor these threats and develop strategies to effectively address them.

5 Discussion and conclusion

5.1 Discussion

The discussion section is a crucial component of a thesis, providing interpretive explanations, acknowledging limitations, and presenting recommendations and project results. (Natalia 2022). The research was conducted efficiently within the prescribed timeline and process, resulting in clear answers to the research questions. Although the collected results will be used in the future, there are still several limitations and difficulties in implementation.

Firstly, the author's limited knowledge and experience made it challenging to establish a strong theoretical foundation for the project. Additionally, using English in the survey may have limited the number of participants, impacting the results and potential customer desire to change product functionality in the future. The price of the product is also a limitation since it is quite expensive for middle-income individuals. Therefore, the author needs to consider and improve the price and performance of the product based on survey results.

In summary, while this thesis provided the necessary information for the author's project, a more detailed business plan is required, along with further research and a clear calculation of the new company's working capital projections. This thesis serves as a primary database for the business project in Finland, but the author needs to delve deeper into the steps of establishing a complete business plan and study the procedures to set up a smart home product startup. Despite these challenges, the author is confident in successfully establishing the first step of this project's business plan.

5.2 Conclusion

Overall, the research project has successfully answered the research questions and achieved the goals set by the author. The project has provided valuable insights into the smart home product market in Finland and the factors affecting the product's success. The limitations and challenges faced during the research process have also been identified, and recommendations for further research and improvement have been suggested.

The author has gained important knowledge and experience through this research project and hopes to use this to further develop the business plan for a smart home product startup in Finland. The friendly business environment and government support for startups in Finland provide a promising opportunity for success.

In conclusion, the research project has provided a foundation for future endeavors in the smart home product market in Finland. The author believes that with further research and development, it is possible to successfully establish a smart home product startup in Finland and contribute to the development of the smart home industry in the country.

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Appendices

Appendix 1 Interview Questions

1. Which of the following groups do you think is the potential audience for smart home product?
2. How like are people in Finland to adopt smart home products to improve their daily life, and what other factors may impact their decision? Please select the option that best describes your opinion.
3. Would you be interested in the security and safety features of smart home products?
4. What features of smart home products are most important to you when considering purchasing them for your home in Finland?
5. Which of the following technical solutions do you prefer in controlling smart devices in your home?
6. Do you have a wireless internet connection at home?
7. Are you interested in new technologies?
8. Do you have a smart home device in your home?
9. If you answered yes or maybe, what smart home device do you have at home?
10. You do not have smart home technology in your home right now, can you tell me why?
11. What new features would you like to see in the future smart home products?
12. Do you want a fully automated home?
13. How much would you pay to upgrade the intelligence of your existing home by buying more smart devices?
14. How much would you pay for smart home features if you bought a home?
15. Will you invest in smart technology in the next 5 year?