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Higher School of Management ESM-TLEMCEN-

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Speciality: Management and corporate's strategy * /Management of healthcare services**

Theme

Business plan of our start-up ALTA PROTECTION

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Dedication

I dedicate this work to: My parents who have always encouraged me in the path of knowledge;

My sisters and brothers

My brothers in law Ilyes and Khaled

My partner TOUMI Reda

All my teachers at every level especially Mr IZNESNI Ali

All my classmates and my dear friends Zoula, Marwa, Massinissa, Djame, Chirraz, Amira, Chaima and Katrenada

Everyone who has provided me with assistance and support...

BERKANE Hana

Dedication

In the name of ALLAH

First and foremost, most thanks to Allah for giving me strength to realize this work;

I dedicate my work to my father, mother who always support me;

To my grandmothers who always wish me day and night success;

And special dedication to all my friends and the rest of the family who encourage me

TOUMI Reda

Acknowledgments

Hana & Reda

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We are grateful to our families and friends for their unwavering support, understanding, and encouragement throughout this journey. Their belief in our abilities and their words of encouragement have been a constant source of motivation.

Finally, we would like to express our heartfelt appreciation to all the researchers, scholars, and individuals whose works and contributions have laid the foundation for this study. Their dedication to advancing knowledge in this field has been a constant source of inspiration.

Without the support and collaboration of all these individuals, this thesis would not have been possible. We are truly grateful for their contributions, and we hope that this work contributes to the existing body of knowledge in a meaningful way.

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Introduction

Economic innovation stands out as an instrumental factor propelling national growth and advancement. This process entails the generation of inventive concepts alongside disruptive technologies that produce remarkable improvements in productivity while driving innovations in product/service offerings but also spawning new industries altogether. Given how rapidly businesses operate nowadays within an interconnected world- economic innovation has come into sharp focus for societies looking to achieve enhanced competitiveness whilst remaining nimble & adaptive amidst evolving geopolitical global affairs.

Economic creativity expands beyond mere technical progress or inventions alone. Rather it is inclusive of various other aspects such as procedural experimentation, organizational experimentation along with business models innovations to name a few examples. Its reach is not limited to the realms of science or technology only but also covers diverse sectors including finance, healthcare services, energy industry plus agriculture among others. Economic creativity represents a multifaceted phenomenon that fosters progress towards boosting productivity while creating new prospects for both individuals plus enterprises alike.

Governments, businesses, and individuals recognize the vital role of economic innovation in fostering sustainable economic development. Policies and strategies aimed at promoting innovation are being implemented at national and international levels. Investments in research and development, fostering a supportive entrepreneurial ecosystem, promoting collaboration between academia and industry, and encouraging risk-taking and experimentation are some of the approaches taken to nurture and harness economic innovation.

Innovation has consistently proven to be a catalyst for transformative change and has the potential to revolutionize various aspects of human life, ultimately leading to the saving of lives. Through groundbreaking advancements in technology, medicine, security and various industries, innovation has enabled the development of life-saving treatments, diagnostic tools, and preventive measures. The importance of innovation and technology in saving human lives becomes particularly evident when it comes to preventing home accidents. Each year, a significant number of injuries and fatalities occur within the confines of our homes, often resulting from preventable accidents. However, through the integration of innovative solutions and technological advancements, we have the potential to greatly reduce these incidents and their consequences

First axe

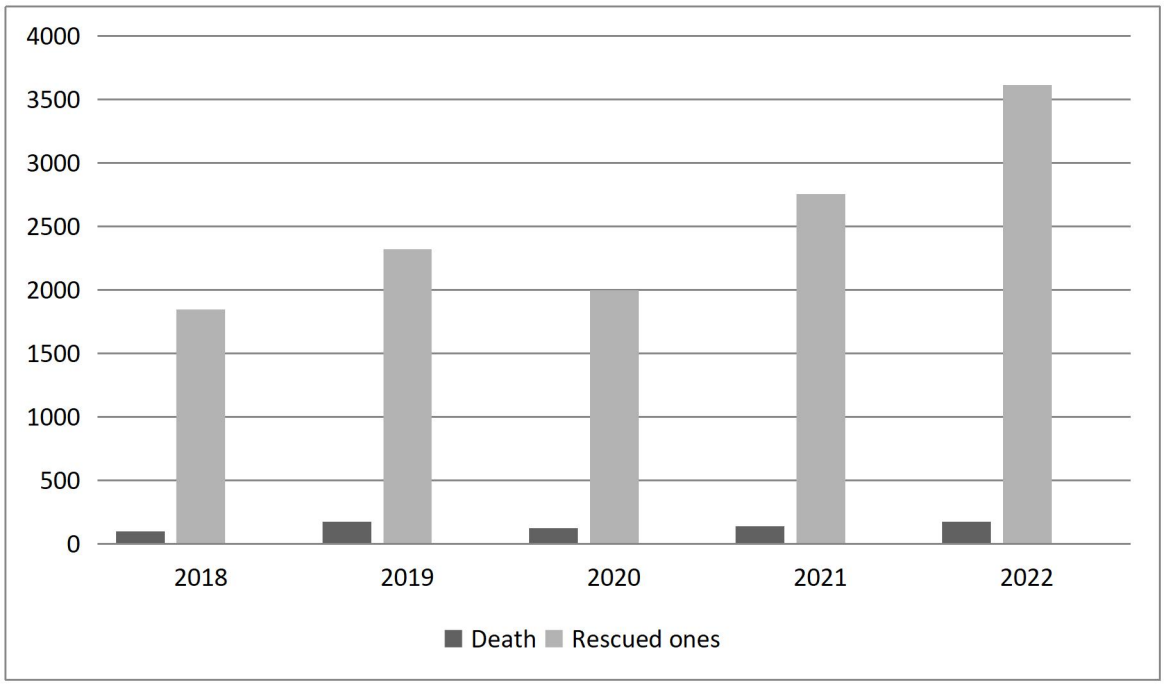
The presentation of the project

1-Project presentation

During every winter season, carbon monoxide continues to silently claim human lives. This invisible killer takes new victims each year, turning the daily lives of some into tragedies and causing immense grief for affected families.

CO leaks in households become an unforgivable mistake each winter. The search for warmth, combined with the lack of maintenance and upkeep of heating and water heating systems, unfortunately leaves lasting consequences. The civil protection services record several cases of carbon monoxide asphyxiation every year, and they intensify their efforts in terms of awareness and interventions to combat this phenomenon. In Algeria, this gas causes significant damage, with a series of accidents characteristic of our winters. These tragedies have sadly become part of the daily life of Algerian families during this time of year.

Fig 1:Statistics of asphoxysis victims of CO in Algeria



Source: https://www.protectioncivile.dz consulted on 10-07-12-2022

1.2-Solution

To combat the danger consequences of gas leaks and prevent loss of life, we have developed **Alta Protection**. This groundbreaking solution serves as a vital safeguard, aiming to eliminate the risks associated with gas leaks and ensure the well-being of individuals.

ALTA PROTECTION is an innovative and intelligent CO detection system that incorporates automation and a comprehensive control and management application, catering to the concept of smart homes. This advanced system consists of a central unit responsible for collecting information regarding CO leaks. It issues commands to an electro-valve installed on gas appliances to automatically shut off the gas supply in case of a leak. Simultaneously, the system sends notifications to users to alert them about the situation. Additionally, users can manage their gas appliances through the intuitive application, providing a seamless and secure experience within the smart home ecosystem.

1.3-The field of the project:

The project is an industrial project; it falls under the field of Home Automation, Safety and security. It combines elements of smart home technology, automation, and safety systems to provide an innovative and intelligent solution for CO detection and gas appliance management.

1.4-Project Overview:

The primary objective of ALTA PROTECTION is to provide home-owners with an advanced and reliable solution for CO detection, ensuring the highest level of safety and peace of mind. This is achieved through the construction of a state-of-the-art manufacturing facility equipped with high-quality machinery and utilizing electronic and other raw materials. The project leverages the expertise of the workforce to develop an efficient product that incorporates Internet of Things (IoT) technology. By combining these elements, the project aims to deliver a technologically advanced solution to meet the demands of the market.

1.5-Project implementation

Bordj BouArreridj is Located in north-eastern Algeria, it has gained a strong reputation as the nation's electronics industry capital. The province boasts numerous manufacturing facilities, research centers, and educational institutions focused on electronics and related fields. These establishments play a vital role in fostering innovation, knowledge development, and industry growth. Additionally, this province benefits from a sizable and skilled workforce, providing businesses in the electronics sector with access to the necessary expertise and talent, ultimately enhancing productivity and competitiveness. The province's strategic location further enhances its economic significance, as it enjoys convenient transportation links that facilitate the movement of goods and services. This accessibility has turned Bordj BouArreridj into an attractive commercial and industrial hub, drawing the interest of both domestic and international businesses.

2-The proposed values

The project offers several added values that contribute to its significance and benefits:

Enhanced Safety: The primary added value of the project is the heightened safety it provides to home-owners. By integrating CO detection, gas appliance management, and automated gas shut-off capabilities, ALTA PROTECTION significantly reduces the risks associated with gas leaks and potential CO poisoning, ensuring a secure living environment.

Real-Time Monitoring and Alerts: The project's ability to monitor CO levels and air quality in real-time, coupled with its instant alert system, adds value by promptly notifying users of any potential gas leaks or hazardous conditions. This timely information enables quick response and preventive actions, minimizing the risk of accidents and protecting lives.

Convenience and Automation: By seamlessly integrating with smart home ecosystems, the project offers the convenience of remote control and management. Users can monitor and manage their gas appliances, adjust settings, and receive alerts through a user-friendly application, adding convenience and control to their daily lives.

Energy Efficiency: The project's focus on managing gas appliances and promoting energy efficiency adds value by allowing users to make informed decisions about gas consumption. By monitoring and controlling gas usage, home-owners can potentially reduce energy waste, resulting in cost savings and a more sustainable lifestyle.

Integration with Smart Home Ecosystem: The project's compatibility with existing smart home platforms and devices adds value by providing a cohesive and interconnected smart home experience. Users can integrate ALTA PROTECTION with other smart devices, enabling automation and synergy among various aspects of their smart home ecosystem.

Peace of Mind: The added value of peace of mind cannot be overstated. By implementing Alta Protection, homeowners can have greater confidence and peace of mind knowing that their homes are equipped with advanced CO detection and safety features. This added sense of security contributes to an improved quality of life and well-being.

3-The teamwork of ALTA PROTECTION

Table 1: The teamwork and their missions

Name	**Specialty**	**Mission**
BERKANE Hana	Management and corporate's strategy Hgher school of Management	**Manager :** • Planning and Goal Setting: • Organizing and Resource Allocation • Decision Making • Continuous Improvement
TOUMI Reda	Management of healthcare services Higher School of Management	**Product manager** • Website Development • Web Application

		Development • Website Maintenance and Updates • Responsive Design and Cross-Browser Compatibility • Continuous Learning and Skill Enhancement:
KOUACHE Ilyes	**Doctor in Electrical Engineering**	**Production manager** • Planning and organizing production activities • Ensuring quality and efficiency • Managing and supervising production teams • Managing production resources

Source: Established by us

3.1-Methods of interaction and communication between the teamwork

The effective communication within our team has played a crucial role in the success of our study. It has fostered coherence and facilitated the sharing of information among team members. We have utilized various

- ✓ Communication tools: Zoom, WhatsApp, and phone calls to maintain regular and efficient communication. These platforms have allowed us to discuss ideas, exchange updates, and

address any challenges or concerns in a timely manner. We used these tools even with the different suppliers to get information about the equipment and the raw materials.

- ✓ Document management and storage: we have leveraged Google Drive, which has provided a reliable and convenient platform for storing and sharing project-related files. This has enabled easy access to important documents, collaborative editing, and version control.
- ✓ Sending and receiving documents: we have relied on Gmail, which has served as a reliable email platform for seamless communication. It has facilitated the sharing of reports, research findings, and other project-related information.
- ✓ Task planning and control, we have utilized ClickUp, a project management tool. ClickUp has enabled us to create and assign tasks, set deadlines, track progress, and monitor the overall project timeline. This has enhanced our team's coordination and allowed us to stay organized and on track.

4-The objectives of project

Table 2: Objectives of ALTA Protection

The terms	Objectives	KPI
The short terme	• Product Development: Finalize the development and testing of the intelligent CO detection system, ensuring its effectiveness and compliance with industry standards. • Market Research: Conduct comprehensive market research to identify target customer segments, understand their needs, and assess	Product Development: KPI 1: Successfully complete product development and testing, meeting all predefined specifications and quality standards. KPI 2: Obtain positive feedback from beta testers and stakeholders, indicating satisfaction with the performance and functionality of the intelligent CO detection

	the competitive landscape. • Pricing and Packaging: Determine competitive pricing strategies and develop attractive product packaging options to appeal to target customers. • Marketing and Launch: Create a marketing plan and execute a successful product launch, generating awareness and interest among potential customers. • Sales and Distribution: Establish initial distribution channels and sales networks to make the product accessible to customers, focusing on key regions and markets.	system. Market Research: KPI 1: Conduct surveys and interviews to gather insights on customer needs, preferences, and willingness to adopt the new CO detection system. KPI 2: Identify and profile target customer segments based on demographic, psychographic, and behavioral characteristics. Pricing and Packaging: KPI 1: Determine competitive pricing strategies that ensure profitability while remaining attractive to target customers. KPI 2: Develop visually appealing and informative product packaging that effectively communicates the value proposition and key features. Marketing and Launch: KPI 1: Generate a predetermined number of leads or inquiries from potential customers through marketing campaigns, advertising, and promotional activities. KPI 2: Achieve a specified level of media

		coverage and online visibility through press releases, social media engagement, and influencer partnerships. Sales and Distribution: KPI 1: Secure agreements with a set number of distribution partners or retailers to ensure product availability in target markets. KPI 2: Achieve a predetermined sales volume or revenue target within the initial launch period.
The medium term	• Market Penetration: Increase market penetration by expanding distribution channels, partnering with retailers, and targeting specific customer segments such as homeowners, property developers, and safety-conscious individuals. • Customer Acquisition: Implement targeted marketing campaigns to acquire a significant customer base, emphasizing the benefits and unique features of the intelligent CO detection system. • Customer Support: Develop a robust customer support system to	Market Penetration: KPI 1: Increase market share by capturing a certain percentage of the target market, measured in terms of revenue or units sold. KPI 2: Expand the distribution network to include a specified number of new locations or partnerships. Customer Acquisition: KPI 1: Achieve a predetermined number of new customer sign-ups or purchases within the target market. KPI 2: Track customer satisfaction and aim for a high customer retention rate, indicated

	provide timely assistance, troubleshooting, and ongoing maintenance services to enhance customer satisfaction and loyalty. • Brand Awareness: Enhance brand awareness through consistent marketing efforts, including digital advertising, social media engagement, and participation in industry events and exhibitions. • Partnerships and Collaborations: Identify and establish strategic partnerships with relevant industry players to leverage their expertise, expand product offerings, and drive mutual growth.	by repeat purchases and positive reviews. Customer Support: KPI 1: Maintain a high customer satisfaction score through timely response and resolution of customer inquiries and issues. KPI 2: Monitor the average resolution time for customer support tickets and strive to reduce it over time. Brand Awareness: KPI 1: Increase brand recognition and awareness by measuring metrics such as website traffic, social media followers, and brand mentions. KPI 2: Monitor the effectiveness of marketing campaigns through metrics like click-through rates, engagement rates, and conversion rates. Partnerships and Collaborations: KPI 1: Establish a set number of strategic partnerships with complementary businesses or industry influencers. KPI 2: Measure the impact of partnerships on brand visibility, sales growth, and market expansion.

The long term	• Market Expansion: Expand the project's market presence beyond the initial target region, capturing new domestic and international markets where CO safety and smart home solutions are in demand. • Research and Development: Continuously invest in research and development to improve the intelligent CO detection system, introduce new features, and stay ahead of emerging technologies. • Brand Differentiation: Develop a unique value proposition and differentiate the project's offerings from competitors through continuous innovation, superior product performance, and exceptional customer experiences. • Industry Leadership: Position the project as an industry thought leader through thought leadership content, participation in industry forums, and collaboration with regulatory bodies and safety organizations.	Market Expansion: KPI 1: Enter a specified number of new domestic or international markets, supported by sales volume or revenue growth in each market. KPI 2: Track market share growth over time, comparing it to competitors in each target market. Research and Development: KPI 1: Introduce a set number of product enhancements or new features based on customer feedback and emerging technologies. KPI 2: Monitor the number of patents filed or technical innovations achieved, indicating a commitment to ongoing research and development. Brand Differentiation: KPI 1: Conduct regular brand perception surveys to measure differentiation from competitors based on key attributes and customer perceptions. KPI 2: Monitor customer loyalty metrics, such as repeat purchases, referral rates, and Net Promoter Score (NPS), as indicators of

		brand differentiation. Industry Leadership: KPI 1: Monitor participation in industry events, conferences, and speaking engagements as a measure of thought leadership and industry recognition. KPI 2: Collaborate with regulatory bodies or safety organizations to shape industry standards and guidelines related to CO detection and home safety. Sustainable Growth: KPI 1: Diversify revenue streams by expanding product offerings. KPI 2: Measure revenue growth and profitability over time, ensuring consistent and sustainable financial performance.

Source: Established by us

5-Time line of project

5.1-Tasks description

This timeline will guide our project's progress and ensure that each task is executed efficiently and effectively. It begins with:

Idea Feasibility Evaluation: This involves assessing the viability and potential success of the project idea, considering factors such as market demand, resources required, and potential challenges.

Team Formation: Assembling a team with the necessary skills and expertise to execute the project effectively. This includes identifying roles and responsibilities within the team.

Market Research: Conducting a thorough analysis of the target market, including customer preferences, competitor analysis, and market trends, to gather insights and make informed decisions.

Business Model Canvas Evaluation: Assessing the business model canvas, a strategic management tool, to determine the viability and profitability of the business model and make necessary adjustments if needed.

Business Plan Elaboration: Creating a comprehensive business plan that outlines the project's objectives, strategies, financial projections, and operational details. This serves as a roadmap for the project's implementation.

Research and Collection of Production Machinery and Raw Materials Information: Gathering information about the required production machinery and sourcing the necessary raw materials for manufacturing the product.

Prototype Realization: Developing a prototype or a working model of the product to validate its functionality, features, and design. This step helps identify any necessary improvements or modifications.

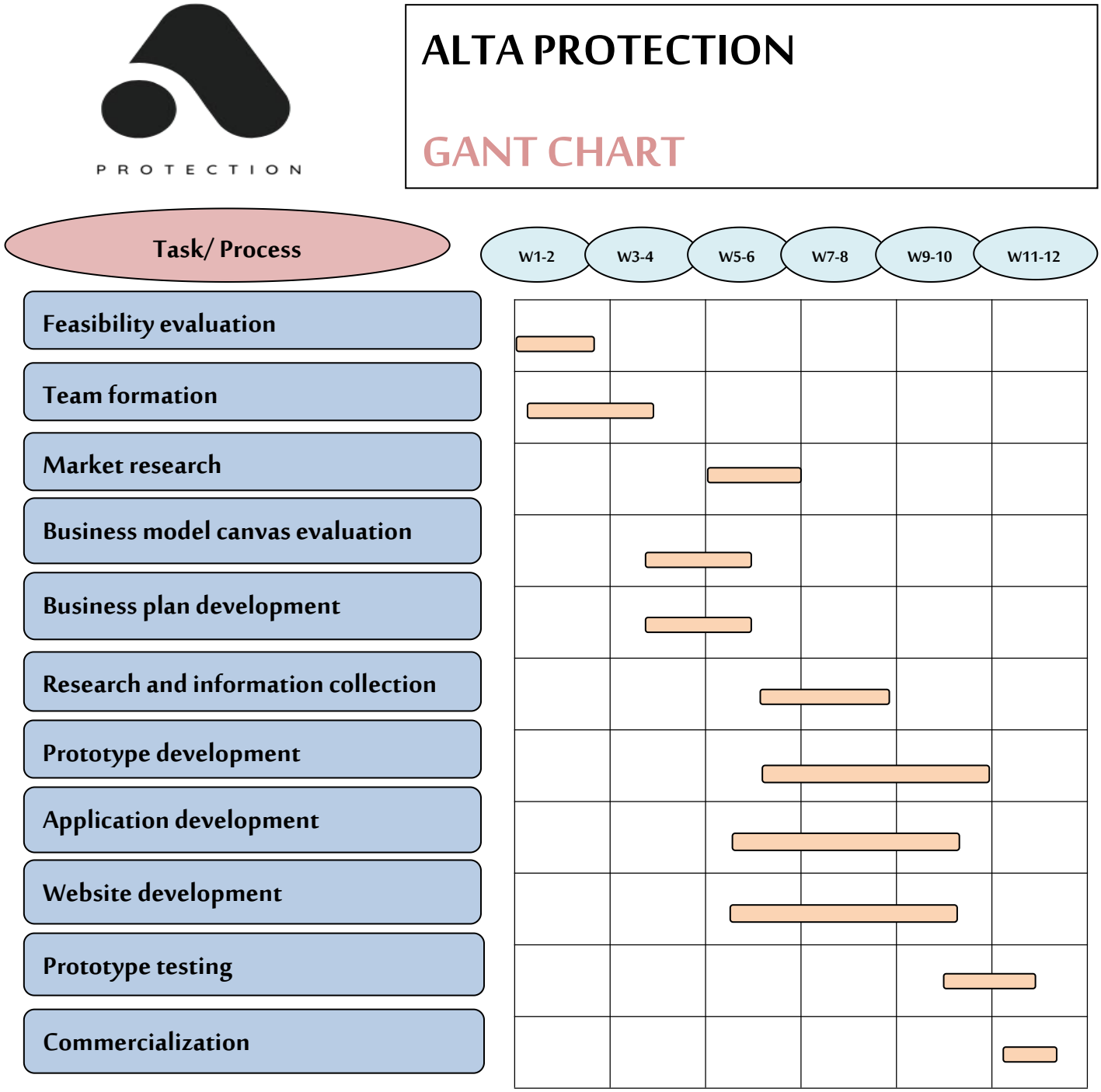
Application Development: Creating a software application that complements the product, enhances user experience, and provides additional functionalities or services.

Website Development: Designing and developing a website that showcases the product, provides information to potential customers, and serves as an online platform for sales and communication.

Prototype Testing: Conducting thorough testing and evaluation of the prototype to ensure its performance, quality, and compliance with safety standards. This step helps identify and resolve any issues or shortcomings.

Commercialization: Launching and promoting the product in the market, implementing marketing and sales strategies, and establishing distribution channels to reach the target customers.

Fig 2: The Gant chart of the project



Source: Established by us

6-Legal side

The legal form of our company will be SARL (limited liability company), chosen for the advantages provided by this form of company.

6.1-Presentation of the Specificity of SARL:

The SARL (Société à ResponsabilitéLimitée) is the most common form of company in Algeria. It consists of a minimum of 2 associates and a maximum of 50 associates. Associates can be individuals or legal entities (such as other companies). The SARL can even be created with a single associate or end up with a single associate through the consolidation of all the shares in the hands of a sole associate. In this case, it is referred to as an "entrepriseunipersonnelle à responsabilitélimitée" (EURL). However, the EURL still follows most of the rules applicable to SARLs. The SARL is managed by one or more managers who are appointed by the associates. The capital is determined freely by the associates and can be very low. The capital is divided into "parts sociales" (social shares) and not into shares.

6.2-Advantages of SARL (Société à Responsabilité Limitée):

Partnership: SARL allows for partnering with others, providing support and resources for business development.

Limited Liability: Associates' personal assets are protected, and their liability is limited to the capital they have contributed.

Flexibility and Adaptability: SARL can easily adapt to changing circumstances and can be transformed into different company forms if needed.

Simplified Operations: With a limited number of associates and a single manager, decision-making processes are streamlined.

6.3-The activity of ALTA

The company's purpose is

-The manufacturing of the security devices.

- Providing other services as installation of the devices and control

Second axe

Innovative aspects

1-The nature of innovation

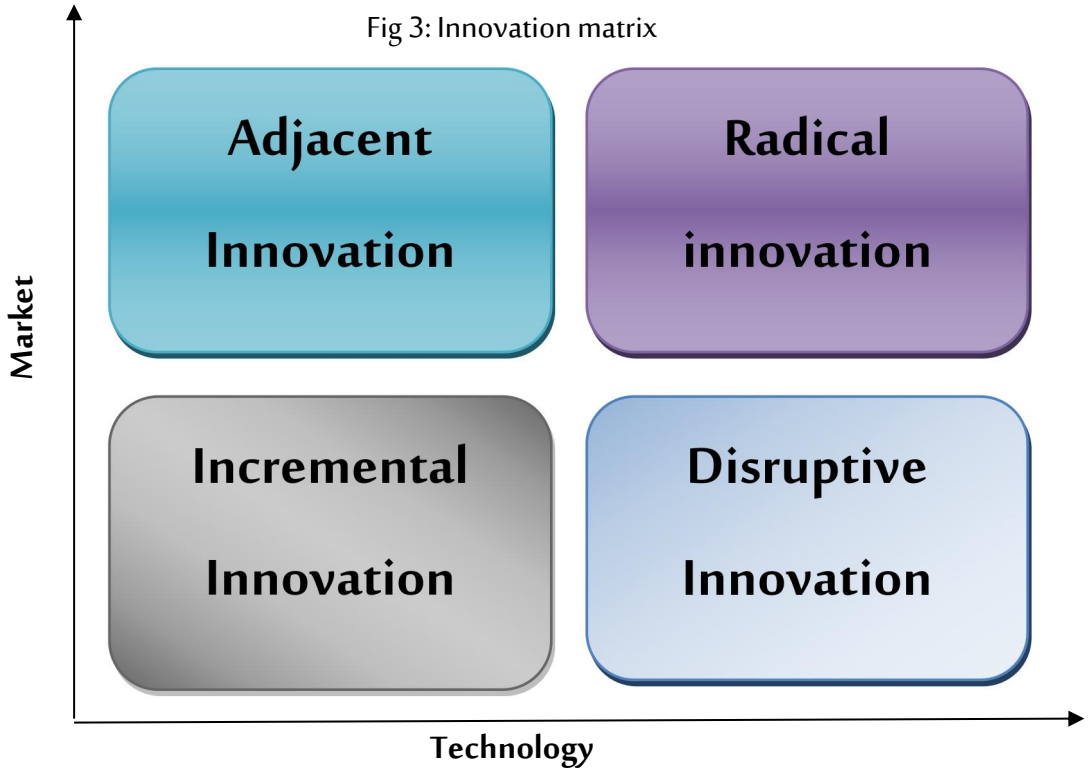
For a product, novelty or improvement can relate to the technology employed or its functional characteristics and usage. In other words, it is not necessary to introduce a new technological element to innovate. Combining existing technologies to offer new applications can lead to innovation, including radical innovation. It is important to note that a product can be defined as a good or a service. Howells and Tether (2004, OECD,2005) classify services into four groups: those related to goods (transport, logistics, etc.), information-related services, knowledge-based services, and person-related services (healthcare, etc.).

According to Joseph Schumpeter the innovation is defined by the introduction of an invention into the social environment. The market is a specific form of social organization.

Invention itself, whether related to technological or functional characteristics, is insufficient to become innovation. It must lead to a market outcome, meaning it should be commercialized, disseminated, or integrated into usage. As early as the 20th century, Schumpeter (1939) defined innovation as the first commercial use of a product that has never been exploited before. Duchamp (1999) proposed an economic recognition criterion for an invention to qualify as innovation ("what validates and justifies innovation is its marketability"). This is also the perspective of Perrin (2001), who views innovation as an economic fact, in contrast to invention. Akrich et al (1988), on the other hand, emphasize a criterion of usage, stating that innovation requires positive validation from users.

Second axe: Innovative aspects

Fig 3: Innovation matrix



Source: Established by us

Our project focuses on technological innovation, specifically within the realm of radical innovation, by introducing novel concepts and leveraging advanced technologies, we strive to revolutionize the market and enhance customer experiences.

The technological innovation plays a vital role in enhancing the safety of human lives. It enables the development of intelligent systems, devices, and solutions that proactively detect, manage, and mitigate potential risks. Our project, with its focus on an intelligent CO detection system for smart homes, exemplifies how technological innovation can be applied to ensure the safety and well-being of individuals. By harnessing the power of innovation, we create a safer world for everyone.

2-The fields of innovation

By aligning our project with these different areas of innovation, we can showcase the diverse ways in which our solution brings novelty and value to the market:

Second axe: Innovative aspects

New processes: The project aims to implement a smart and innovative system for detecting CO emissions and air quality in homes. By utilizing advanced technologies and data collection methods, the project can enhance the process of monitoring and managing gas leaks, thereby increasing operational efficiency and ensuring the safety of residents.

New features: The project includes the development of a central unit responsible for collecting information on CO emissions and air quality, as well as an electrovalve that automatically shuts off gas leaks when detected. These features provide improved safety measures and control mechanisms for homeowners, offering enhanced protection against potential hazards.

New customers: By offering a comprehensive solution for monitoring and managing CO emissions, the project can target new customer segments concerned with home safety and environmental sustainability. This includes homeowners who prioritize the well-being of their families and individuals seeking advanced technologies for a smarter and safer living environment.

New offers: The innovative products and services provided by the project, such as the intelligent CO detection system, offer a unique value proposition to customers. The project goes beyond traditional gas detection systems by incorporating automation, remote control capabilities, and real-time data analysis, providing a cutting-edge solution in the market.

New models: The implementation of the smart CO detection system introduces a new model for enhancing home safety and gas leak prevention. This model involves the integration of advanced technologies, data analytics, and remote accessibility, transforming the traditional approach to home gas monitoring and creating a new value creation system focused on proactive safety measures.

3-Innovative aspects

- ✓ **Integration of IoT Technology:** This technology enables the connection of all equipment together, creating a system capable of monitoring the emission of CO in the air and its quality, controlling the solenoid valve to take action, and alerting the user.

Second axe: Innovative aspects

- ✓ **Automation Potential:** By incorporating solenoid valves and fans, the system has automation potential. This reduces the need for manual intervention and enhances overall efficiency.
- ✓ **AI / Data:** Our system utilizes artificial intelligence to anticipate potential hazards by analyzing real-time environmental data, gas trends, and other parameters.
- ✓ **User Interface:** The mobile application allows users to monitor and control the system remotely, creating a user-friendly interface that can enhance the user experience.
- ✓ **SMART HOME System**: By incorporating artificial intelligence and a user application, our system has the potential to be part of a broader smart home ecosystem.

Third axe

The market analysis

1-The market study

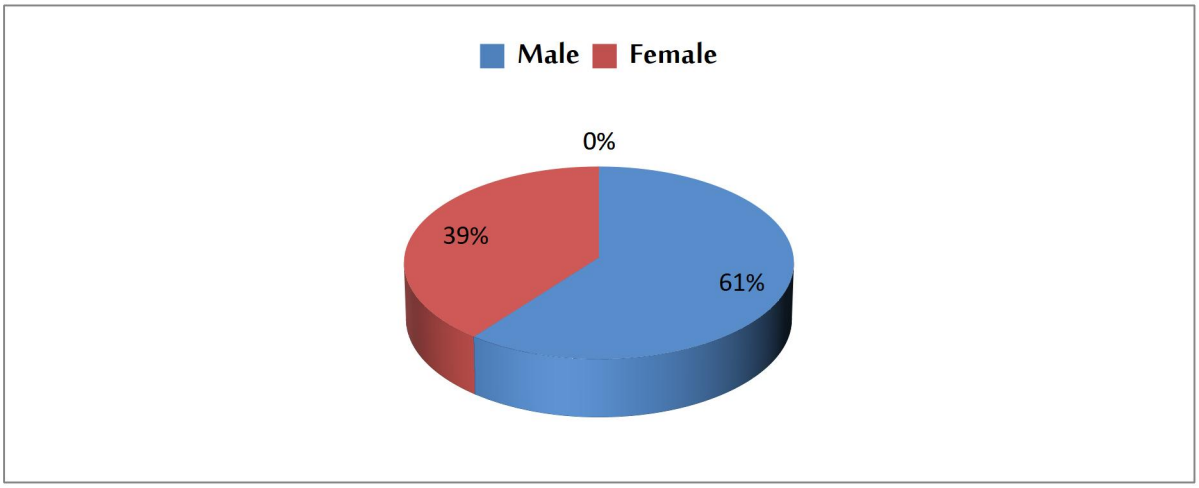
1.1-Demand study

To better understand the behavior of our target audience, we have conducted a survey consisting of 18 questions. The survey was specifically targeted towards the entire Algerian population. We have 130 persons as a sample .By gathering data through this questionnaire, we aim to gain insights into the preferences, needs, and habits of our target market. This information will be invaluable in shaping our marketing strategies, product development, and overall business approach. We are committed to ensuring that our offerings align with the desires and expectations of the Algerian population, and the survey responses will serve as a foundation for making informed decisions and delivering products and services that truly meet their requirements.

1.1.1-The data analysis

Q1: Are you?

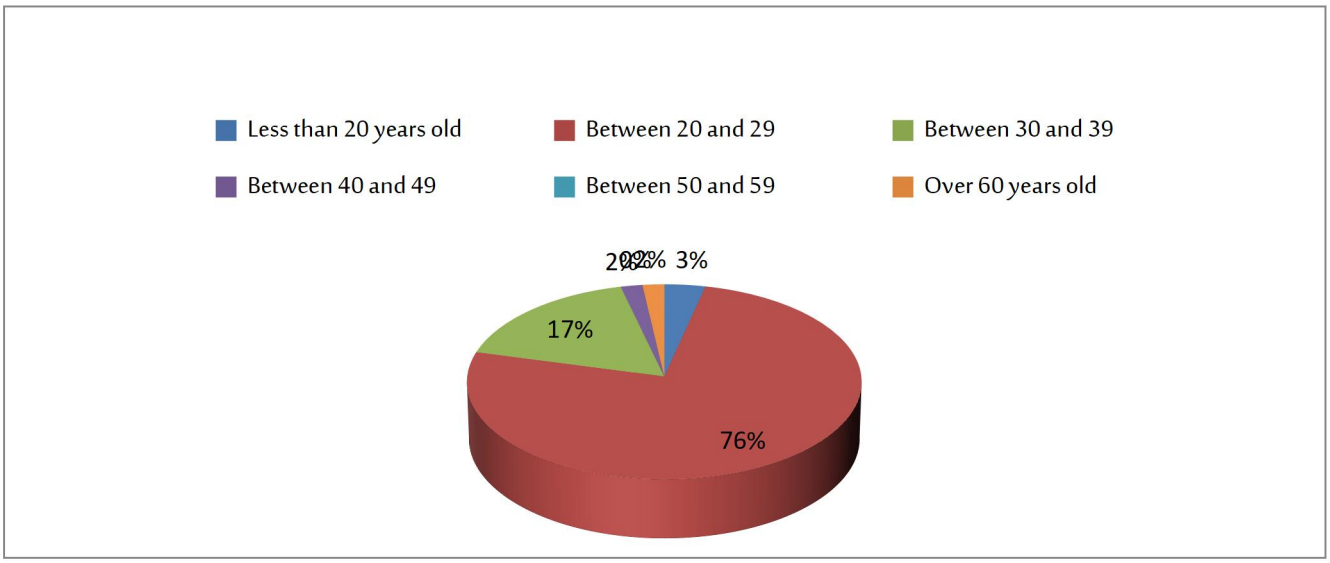
Fig 4: Gender



Source: established by us

Q2: What is your age?

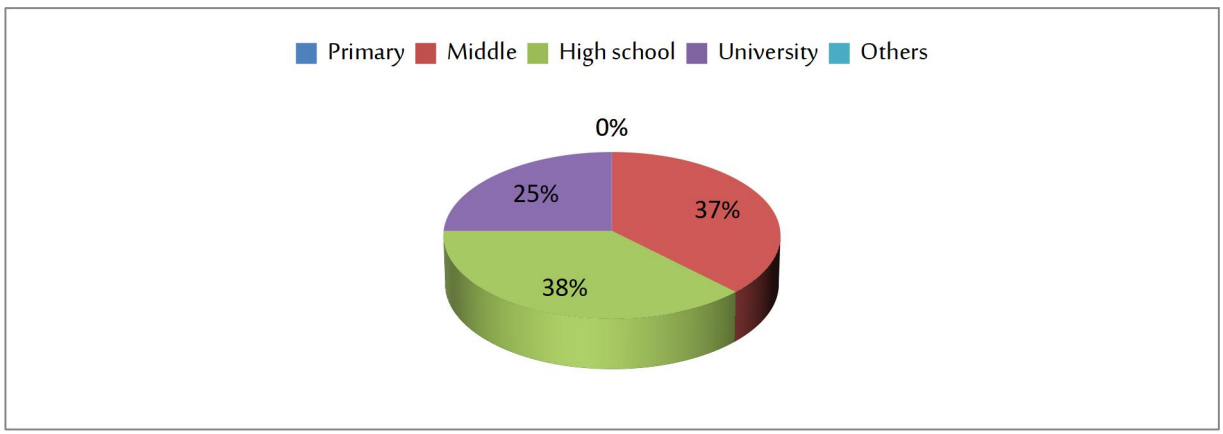
Fig 5: Age



Source: Established by us

Q3:What is your level of education?

Fig 6: Level of education

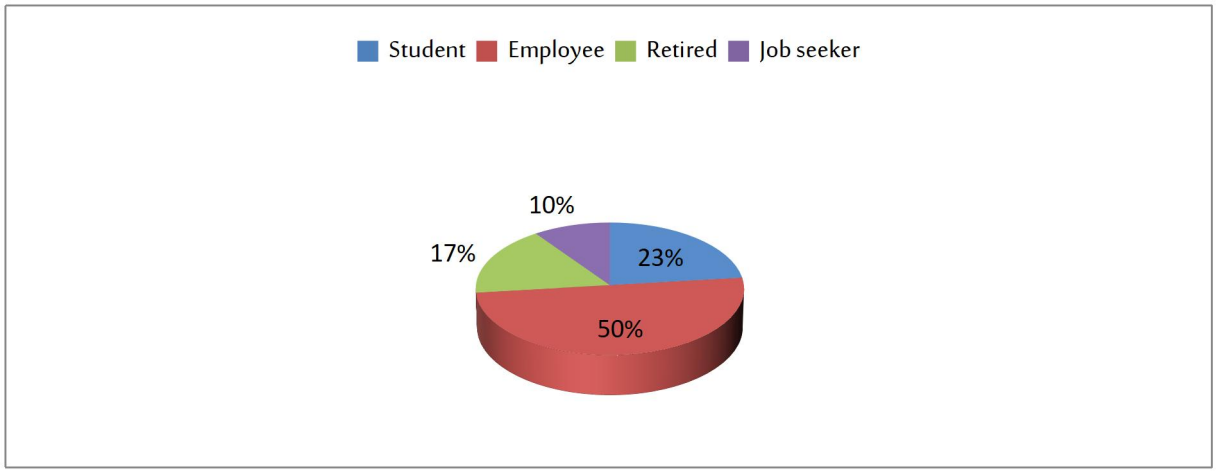


Source: established by us

The majority of respondents were male (60.4%) and in the age range of 20-29 years (72.6%). The education level was primarily university-educated (96.4%). This demographic profile indicates a tech-savvy and educated target audience.

Q4: Are you?

Fig 7: Occupation

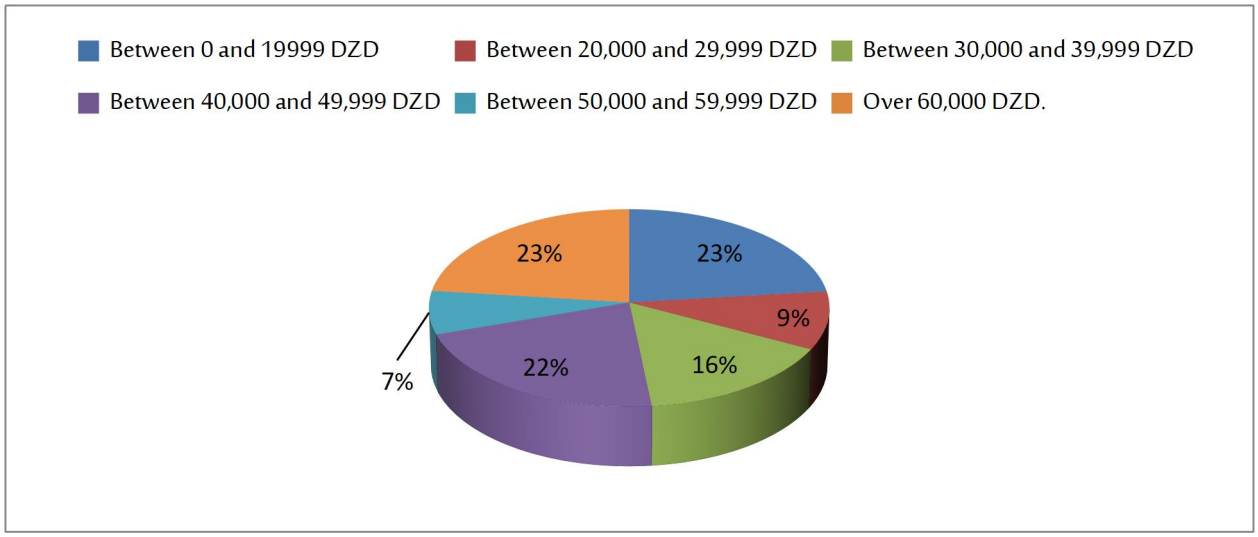


Source: Established by us

The respondents had diverse occupational backgrounds, with 50% being employed, 23.2% being students, 17% being retirees, and 9.8% being job seekers. This provides insights into the purchasing power and financial capacity of respondents. Employed individuals and retirees may have different preferences and budgets compared to students or job seekers.

Q5: What is your income level?

Fig 8: Income level

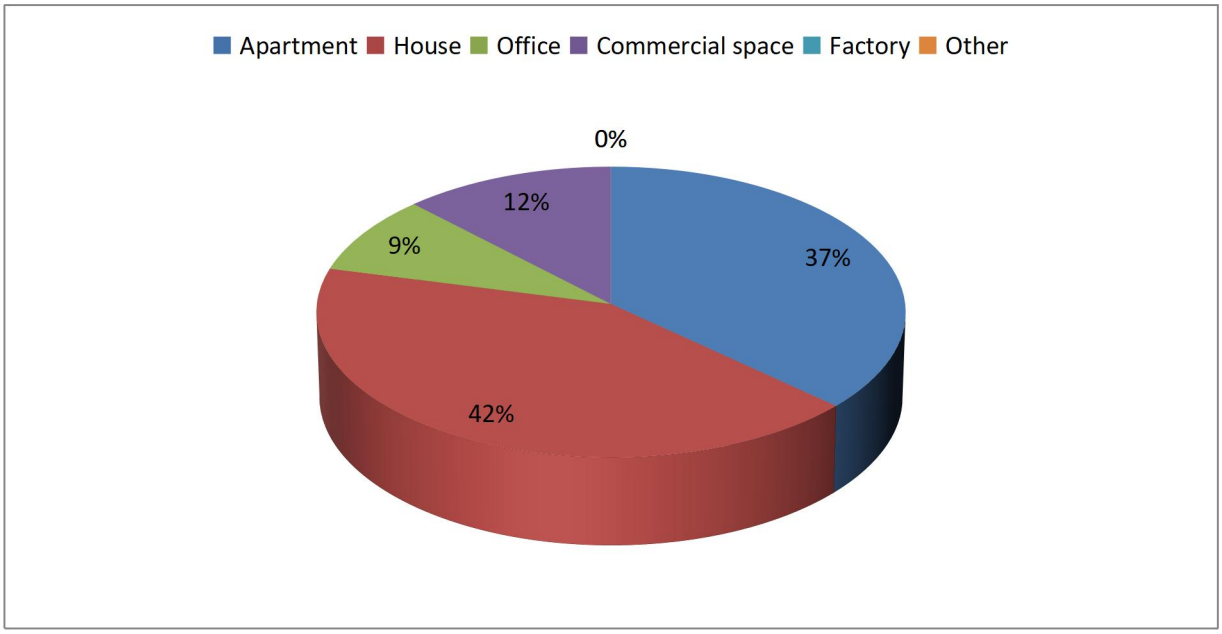


Source: Established by us

The income distribution was varied, with a significant portion (23.2%) falling in the range of 0-19,999 DA, and a substantial percentage (23.1%) having an income above 60,000 DA. The distribution across income ranges helps understand the target market's purchasing power and potential pricing strategies.

Q6: What type of premises do you have?

Fig 9: Type of Location

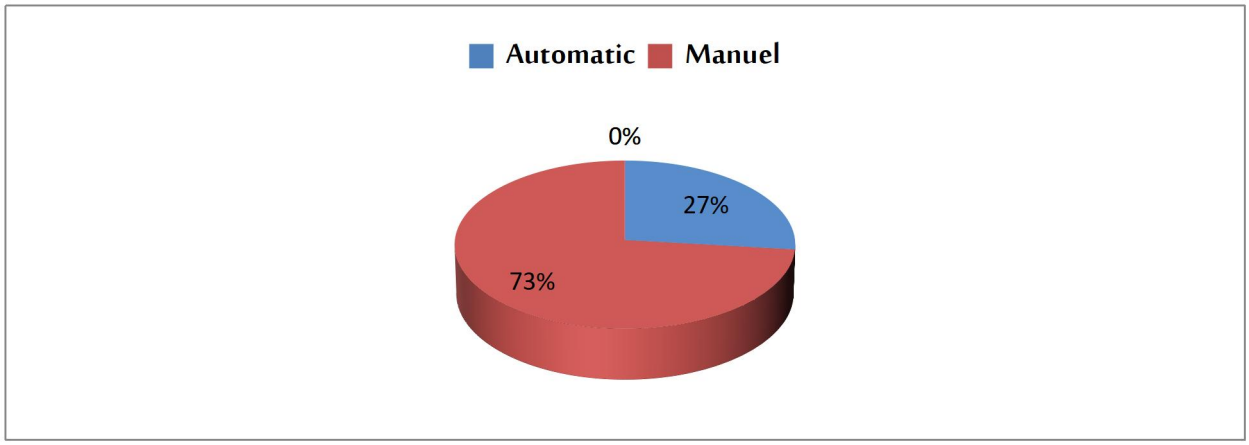


Source: Established by us

The respondents had different types of locations, with the highest percentage (42.9%) living in houses, followed by apartments (37.5%), and a smaller percentage in offices (8.9%) and businesses (12.5%). Knowing the type of location provides information about potential installation environments. Residential locations like houses and apartments may have different needs and preferences compared to commercial spaces like offices and businesses.

Q7: What is the ventilation system in your premises?

Fig 10: Ventilation System

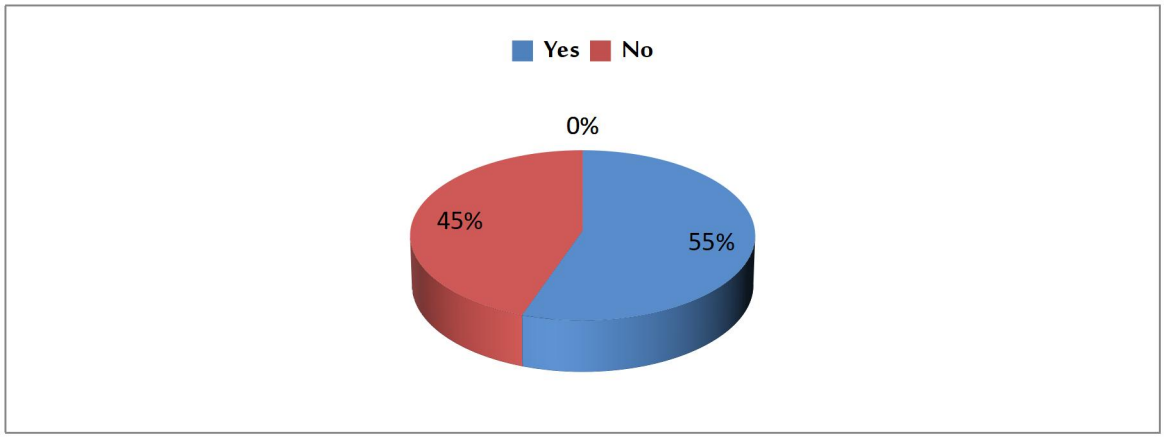


Source: Established by us

The majority of respondents (73.2%) indicated a manual ventilation system. Knowledge of the ventilation system type helps identify the compatibility and integration potential of CO detection systems with existing infrastructure.

Q8:Do you have any experience with carbon monoxide (CO) leaks?

Fig 11:Experience with CO Leaks

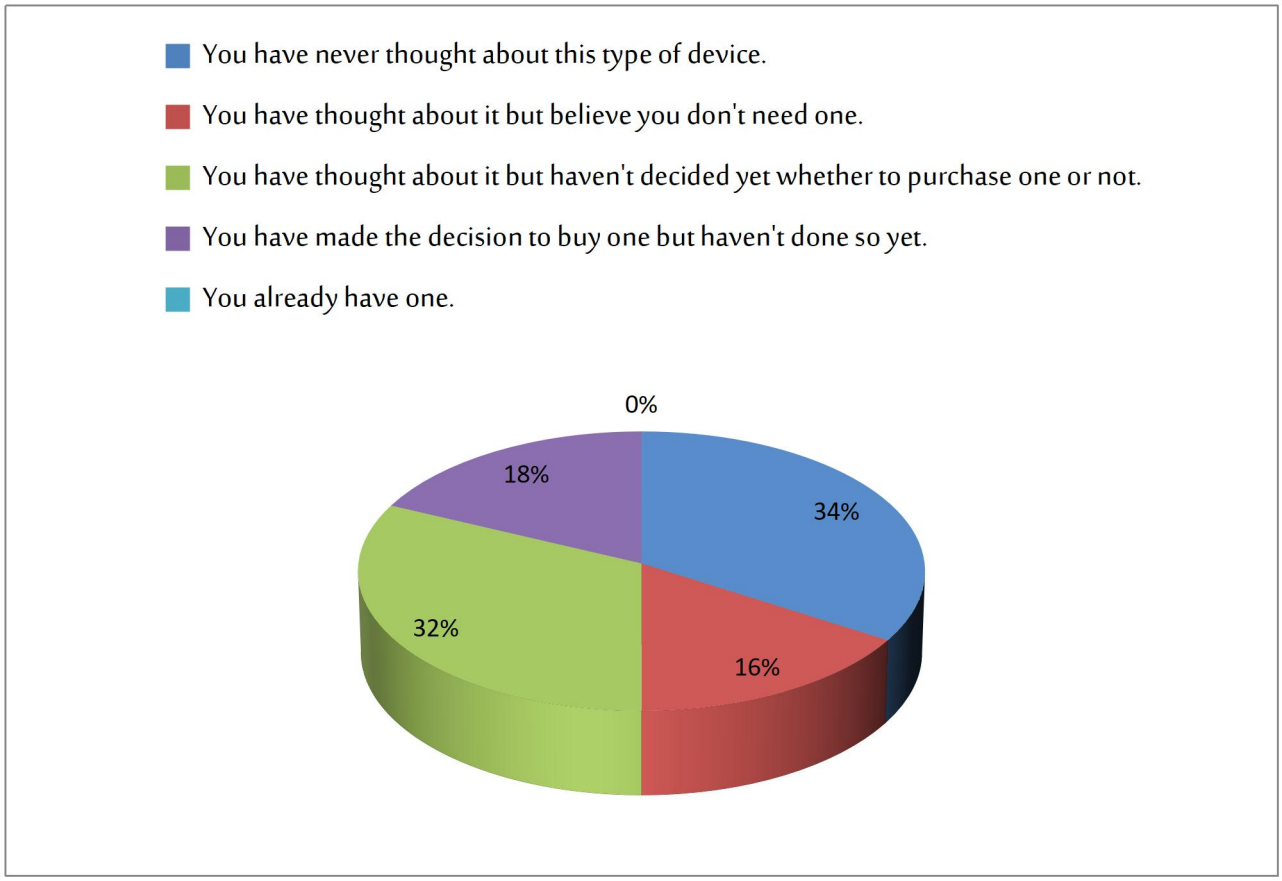


Source: Established by us

The affirmative and significant response rate of 55.4% indicates a considerable degree of familiarity and potential demand for CO detection systems. This serves as a valuable tool for assessing the level of awareness and personal encounters related to CO leaks.

Q9: Among the following statements, which one best describes your position regarding carbon monoxide detectors?

Fig 12:Awareness and Interest



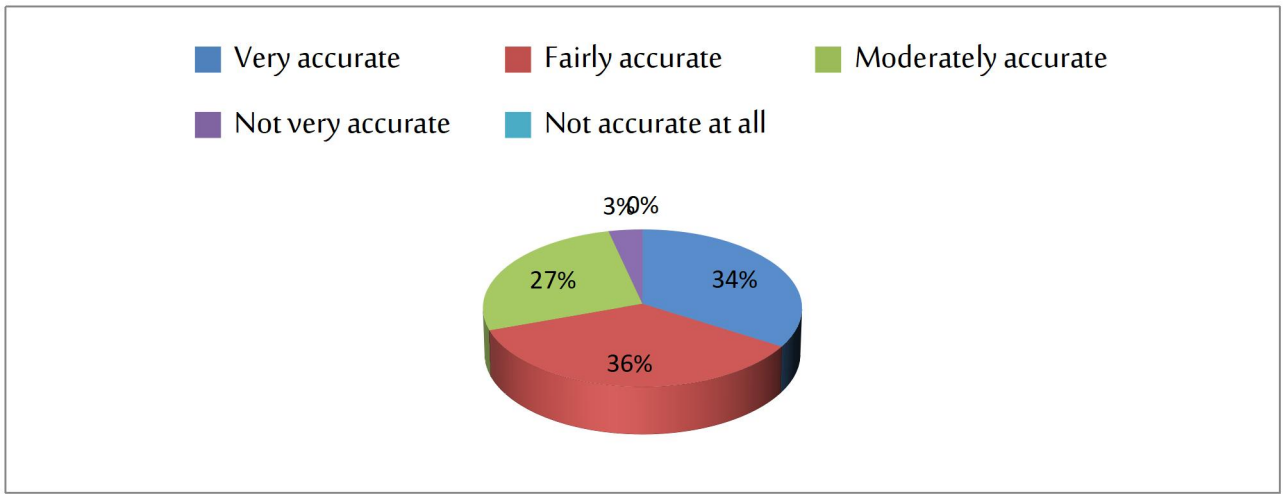
Source: Established by us

A considerable portion of respondents (30.4%) indicated that they have never thought about CO detectors, while others expressed interest in purchasing one. However, a significant percentage (10.7%) already owned a CO detector, indicating some level of awareness and adoption.

Third axe: The market strategic analysis

Q 10: How do you evaluate the accuracy of carbon monoxide detectors?

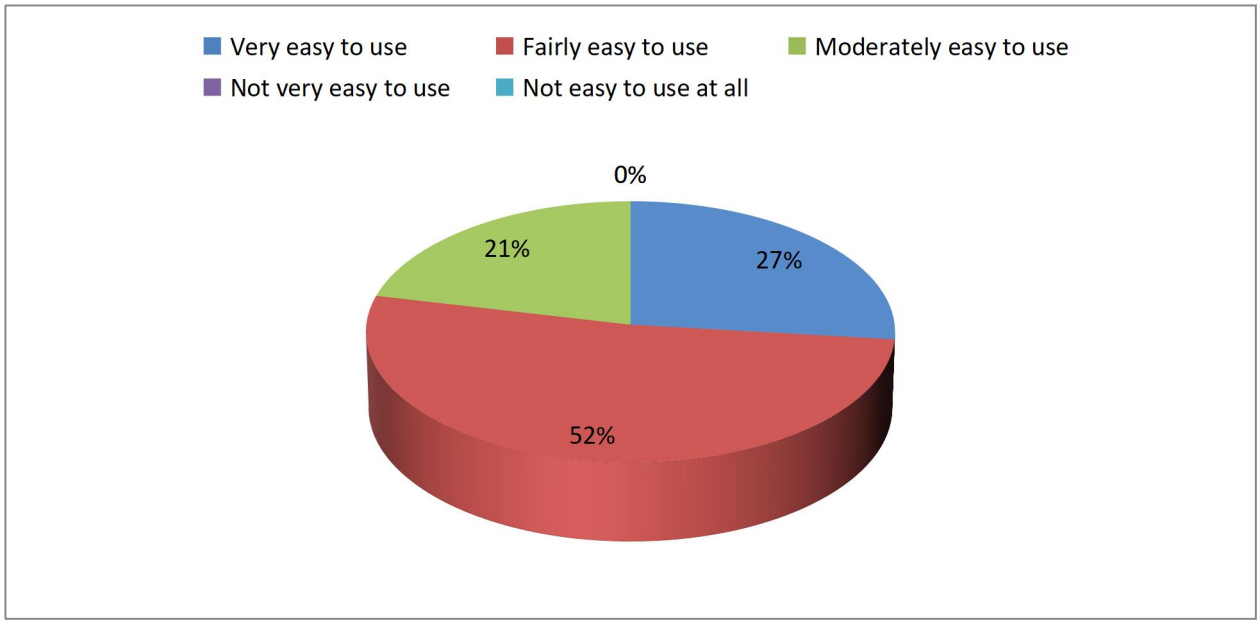
Fig 13: Accuracy



Source: Established by us

Q11:How do you evaluate the ease of use of carbon monoxide detectors?

Fig 14: Ease of use

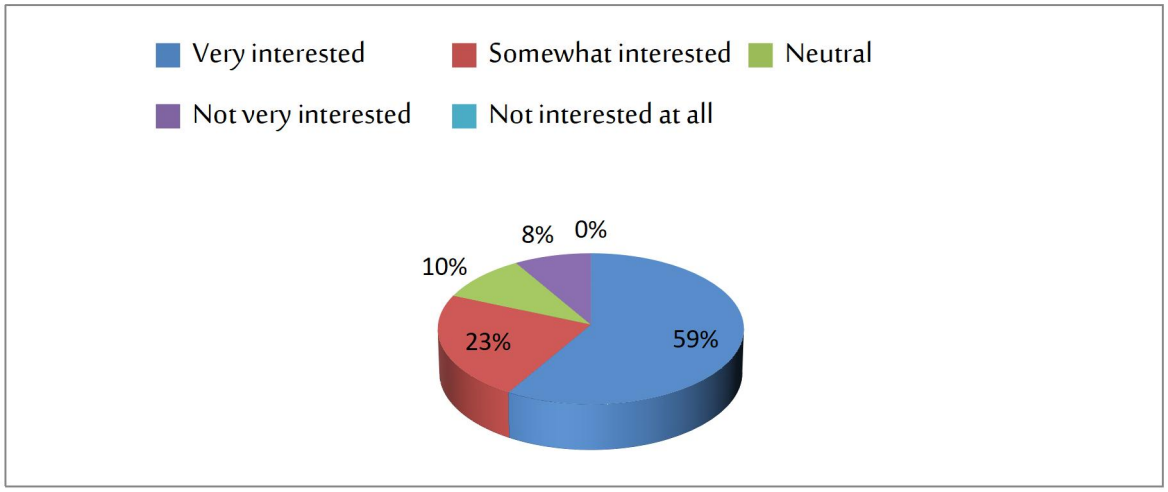


Source: Established by us

The majority of respondents (52%) viewed CO detectors as accurate and easy to use, indicating a positive perception of the product's quality and usability.

Q12:If an intelligent protection and carbon monoxide detection system were available on the market, how interested would you be in this product?

Fig 15: Interest

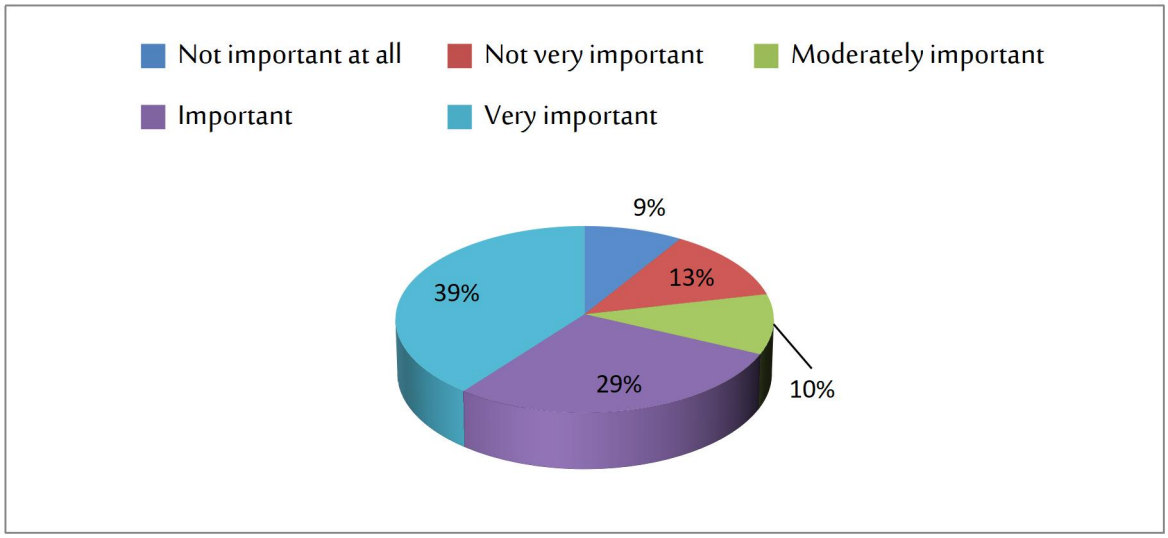


Source: Established by us

The majority found it very interesting (57.1%) or quite interesting (32.1%), indicating a positive response towards the concept. Interest levels indicate potential demand and market acceptance of intelligent CO detection systems. High levels of interest can be an opportunity for market growth and product development.

Q13: How important do you consider the following features in an intelligent security system for carbon monoxide detection? (e.g., Wi-Fi connectivity, voice alerts, visual alerts, capability to send notifications to your smartphone, integration with other smart home devices, remote control capability, automation)

Fig 16: Importance of features

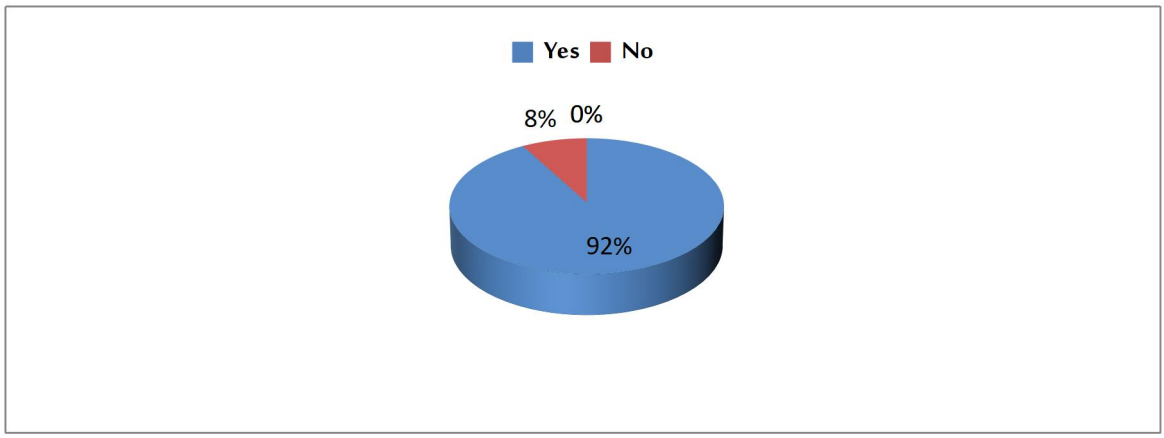


Source: Established by us

Respondents emphasized the importance of various features in an intelligent CO detection system, with a majority (39.3%) considering these features to be very important. This highlights the demand for advanced functionalities such as Wi-Fi connectivity, smartphone notifications, and integration with other smart home devices, and helps prioritize product development.

Q14: Would you purchase a product that includes all these features if it were available today?

Fig 17: Purchase intent

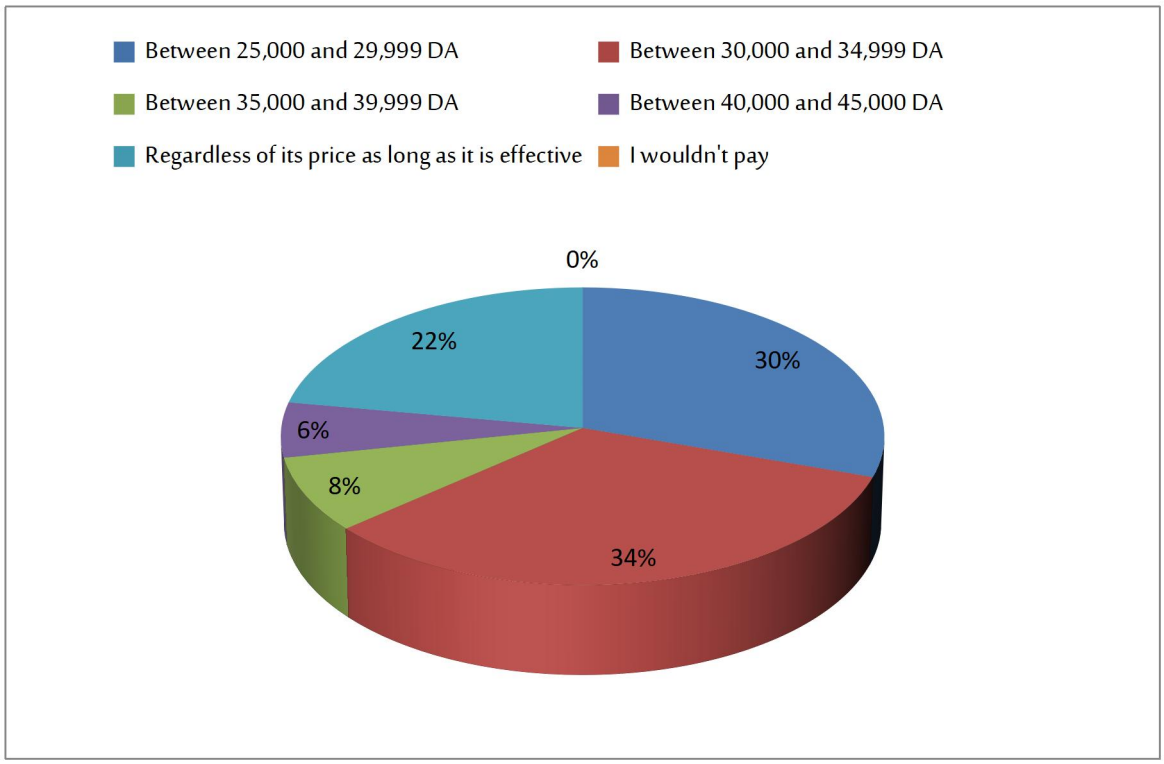


Source: Established by us

A high percentage (91.1%) expressed a willingness to purchase a product that combines all the mentioned features, indicating a strong market potential and demand for such a product which can drive sales and revenue.

Q 15: How much would you be willing to pay to purchase this product?

Fig 18: Price range

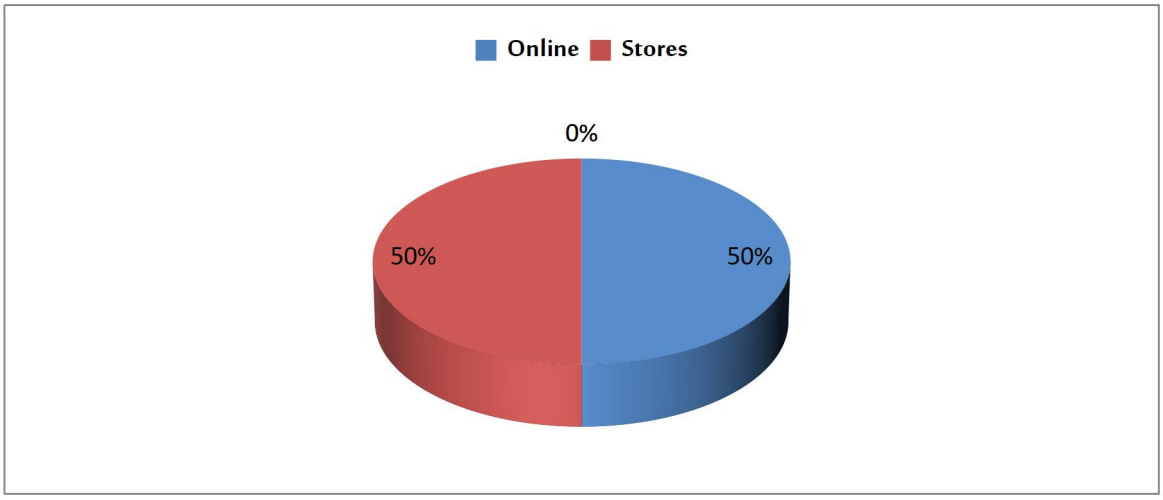


Source: Established by us

Respondents showed willingness to pay for the product, with the majority (30.2%) considering a price range between 30,000 and 34,999 DA. This suggests that pricing the product within this range can attract potential buyers and helps determine pricing strategies.

Q16:Where would you most likely purchase an intelligent security system for carbon monoxide detection?

Fig 19: Distribution Channels



Source: Established by us

Both online and physical stores were identified as probable purchase channels, with an equal preference of 50% for each. This indicates the importance of having a strong online presence and retail partnerships. Knowing the preferred purchase channel provides insights into the distribution strategy and marketing channels to effectively reach and engage the target market.

1.2-The potential market

The potential market for Alta Protection encompasses all individuals and entities that utilize gas or have potential CO emissions. This includes residential households, commercial establishments, industrial facilities, and any other premises where gas is used for heating, cooking, or other purposes

1.3-The target market

Through our project, we target two segments: B2C (business-to-consumer) and B2B (business-to-business).

1.3.1-The B2C segment

-Residential households: This includes homeowners and tenants who use gas for cooking, heating, and other purposes in their homes.

-Hospital establishments: Hospitals and healthcare facilities often have gas systems for various purposes, such as heating, sterilization, and laboratory equipment.

-University establishments (research laboratories): Research laboratories in universities and educational institutions may utilize gas for experiments, testing, and other scientific purposes.

-Industrial facilities: Factories and manufacturing plants that rely on gas for production processes, heating, or power generation are potential customers for Alta Protection.

-Laboratories: Various types of laboratories, including chemical laboratories and testing facilities, may require gas for their operations and can benefit from gas safety solutions.

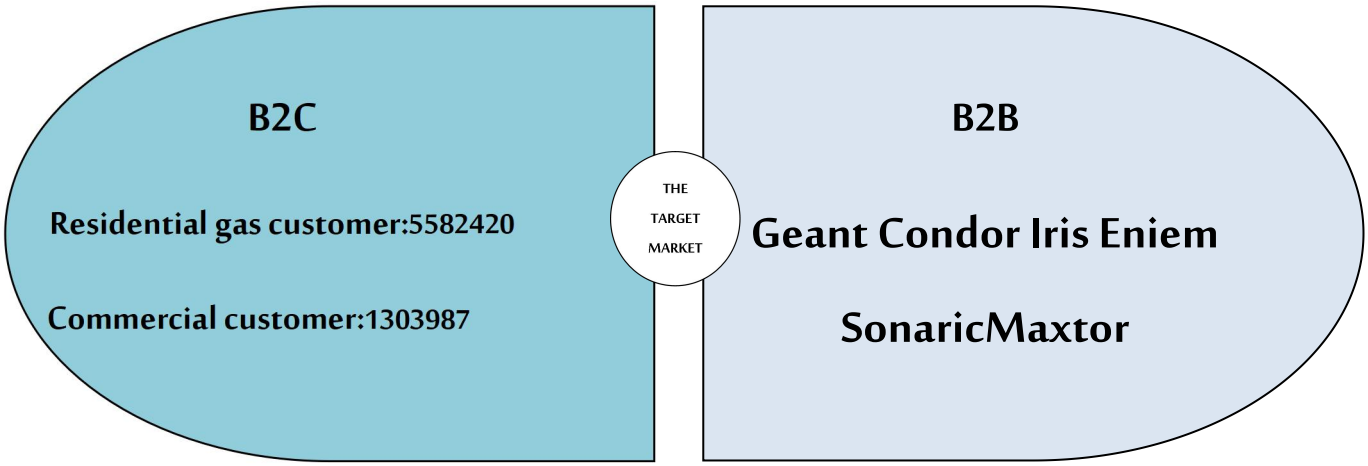
-Hotels: Hotels and hospitality establishments often have gas-powered equipment for cooking, heating, and hot water systems, making them an important market segment for Alta Protection.

-Restaurants: Restaurants and food service establishments that use gas for cooking appliances and heating systems can benefit from gas safety solutions to ensure the safety of their staff and customers.

1.3.2-The B2B segment

The B2B segment primarily caters to manufacturers of gas appliances and international producers. This segment focuses on providing our gas safety solutions to businesses involved in the production and distribution of gas-related products and equipment. By targeting these industry players, we aim to establish strategic partnerships and collaborations to ensure the integration of our innovative gas safety technology into their products.

Fig 20: The target market



Source: Established by us according to official website of SONELGAZ

https://www.sonelgaz.dz/fr, consulted on 25-05-2023

2-Analysis and diagnosis of the company

2.1- Competitors analysis

In addition to the aforementioned domestic competitors, it is important to acknowledge the presence of international players in the CO detectors market who have successfully penetrated the Algerian market.

Table 3: Our competitors analysis

	Logo	Information
The Alegeriancompetitors		Name: CONDOR Date of establishment: Condor was founded in 2002. Location: Condor is based in Algiers, Algeria. Founder: The company was founded by AbderrahmaneBenhamadi. Activity: Condor is involved in the production and sale of a wide range of electronic products, televisions, smartphones, home appliances, and more.
		Name: GEANT Date of establishment :1998 Location: Bordj BouArréridj. Founder: Mebarkia family Activity: manufacturing of electronic products, appliances,
		Name: IRIS Date of establishment 2004 Location: Setif Activity: manufacturing of electronic products, appliances, and IT mobile

		Name: ENIEM Date of establishment :1983 Location: Tizi-Ouzou Activity: manufacturing and development in the various branches of household appliances
		Name: SONARIC Date of establishment :1980 Location: Bouzareah, Algiers Activity: manufacturing and marketing of household appliances.
		Date of establishment :1917 Location: North Carolina Founder: Walter KIDDEE Activity: manufacturing of fire safety products
		Name: SIEMENS Date of establishment :1847 Location: Berlin, Germany Founder: Werner von Siemens Activity: design, development, manufacturing and marketing in digital industry

The International competitors	Honeywell	Name: HONEYWELL Date of establishment : 1885 Location: united state Founder: Mark Honeywell Activity: Electronics and turbocharger
	nest	Name: NEST Date of establishment :2010 Location: Palo Alto -United States Founder: TONY Fadell Activity: Home automation
	FIRST ALERT	Name: FISRT ALERT Date of establishment : 1958 Location: America Founder: Burke-Roberts-Kimberlin (BRK) Electronics Activity: Security, Fire protection systems
	Ei	Name: EI ELECTRONIC Date of establishment :1963 Location: Irland Activity: Electronic, fire protection systems

		Name: BOSCH Date of establishment :1886 Location: Germany Founder: Robert Bosch Activity: Electronic, home appliance

Source: Established by us

2.1.1The characteristics of CO detectors

Wall installation: CO detectors are designed for easy and convenient wall installation. They come with supports and fasteners that allow them to be mounted on walls.

LED display: CO detectors are equipped with a built-in LED display that provides clear visual information about the detector's status.

Siren: CO detectors are equipped with a built-in siren that emits a loud sound signal in the event of detecting dangerous levels of CO.

Advanced technology: CO detectors use advanced technology for precise detection of CO levels.

Mobile application: Some CO detectors come with a dedicated mobile application that allows users to receive alarm notifications.

2.1.2-The strength and weaknesses of competitors

Table 4: The strength and weaknesses of competitors

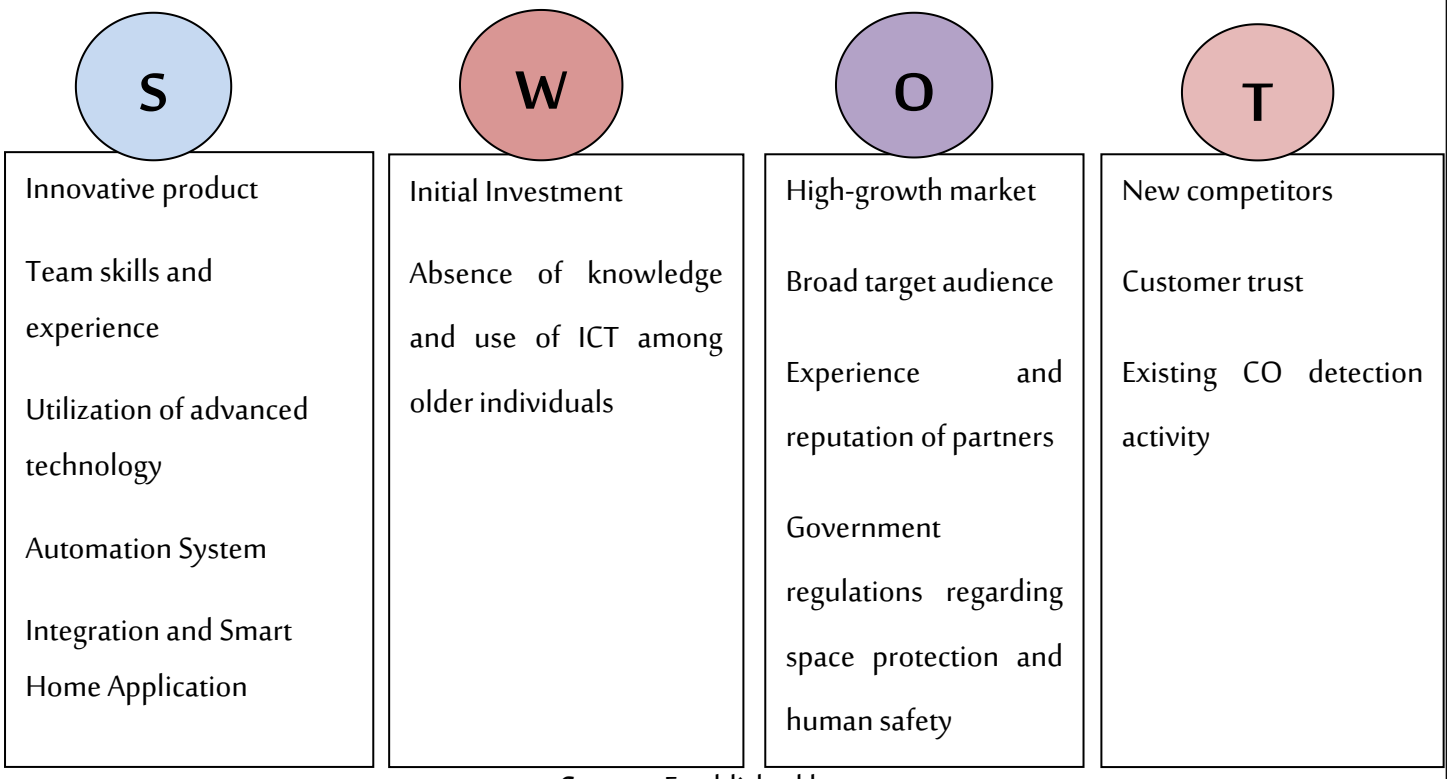
Strength	**Weaknesses**
Established distribution networks and partnerships Technological advancements and innovative	Limited market presence or brand awareness Quality control issues or product reliability concerns

features in their products Wide range of product offerings Competitive pricing strategies	Lack of differentiation from competitors Limited customer support or after-sales services Dependence on specific suppliers or manufacturers

Source: Established by us

2.2The SWOT analysis

Fig 21: ALTA's SWOT analysis



Source: Established by us

2.2.1-Strength

Innovative product: We develop unique and exceptional products that offer improved features and functionality, setting us apart from competitors.

Team skills and experience: Our team consists of skilled professionals with diverse expertise and experience, enabling us to tackle challenges effectively and deliver high-quality solutions.

Utilization of advanced technology: We leverage the latest advancements in technology, such as AI, IoT, and data analytics, to create smarter and more efficient products.

Automation System: We implement automation systems to streamline processes, reduce errors, and optimize productivity, resulting in increased efficiency.

Integration and Smart Home Application: Our products seamlessly integrate with other smart home devices, creating a connected ecosystem that enhances user convenience and customization.

2.2.2-Weaknesses

Initial Investment: Developing and deploying the necessary hardware, software, and infrastructure involves significant costs.

Absence of knowledge and use of ICT among older individuals: Older individuals may have less familiarity and comfort with digital devices, software applications, and online platforms, which can hinder their ability to fully leverage the benefits of our system.

2.2.3-Opportunities

High-growth market: As awareness of gas safety and the importance of protecting lives and property increases, there is a growing need for effective gas safety systems. This presents us with ample opportunities for market penetration, expansion, and revenue growth.

Broad target audience: our broad target audience provides us with a large and diverse customer base to target and serve. It allows us to tap into various sectors and industries, expanding our market reach and potential customer base.

Experience and reputation of partners: We have strategically partnered with experienced and reputable organizations in the industry. These partners bring their expertise, knowledge, and established networks to the table, enhancing our project's credibility and reputation.

Government regulations regarding space protection and human safety: Our project aligns with these regulations, providing customers with confidence in the reliability and adherence to safety standards. Additionally, these regulations create a favorable market environment by establishing guidelines and requirements that encourage the adoption of advanced gas safety systems.

2.2.4-Threats

New competitors: As the gas safety industry attracts attention and demand increases, it is likely that new players will enter the market, offering similar solutions or innovative alternatives.

Customer trust: as safety is a matter of utmost importance, and customers need to have confidence in the reliability and effectiveness of our system. Establishing a strong reputation for delivering high-quality products, providing excellent customer support, and ensuring the utmost safety and security can help us build long-term customer trust.

Existing CO detection activity: Many households and establishments already have CO detectors in place or may have other systems addressing gas safety concerns. Convincing these customers to adopt our system requires showcasing the unique advantages, superior features, and added value that our solution offers.

2.3-The PESTEL analysis

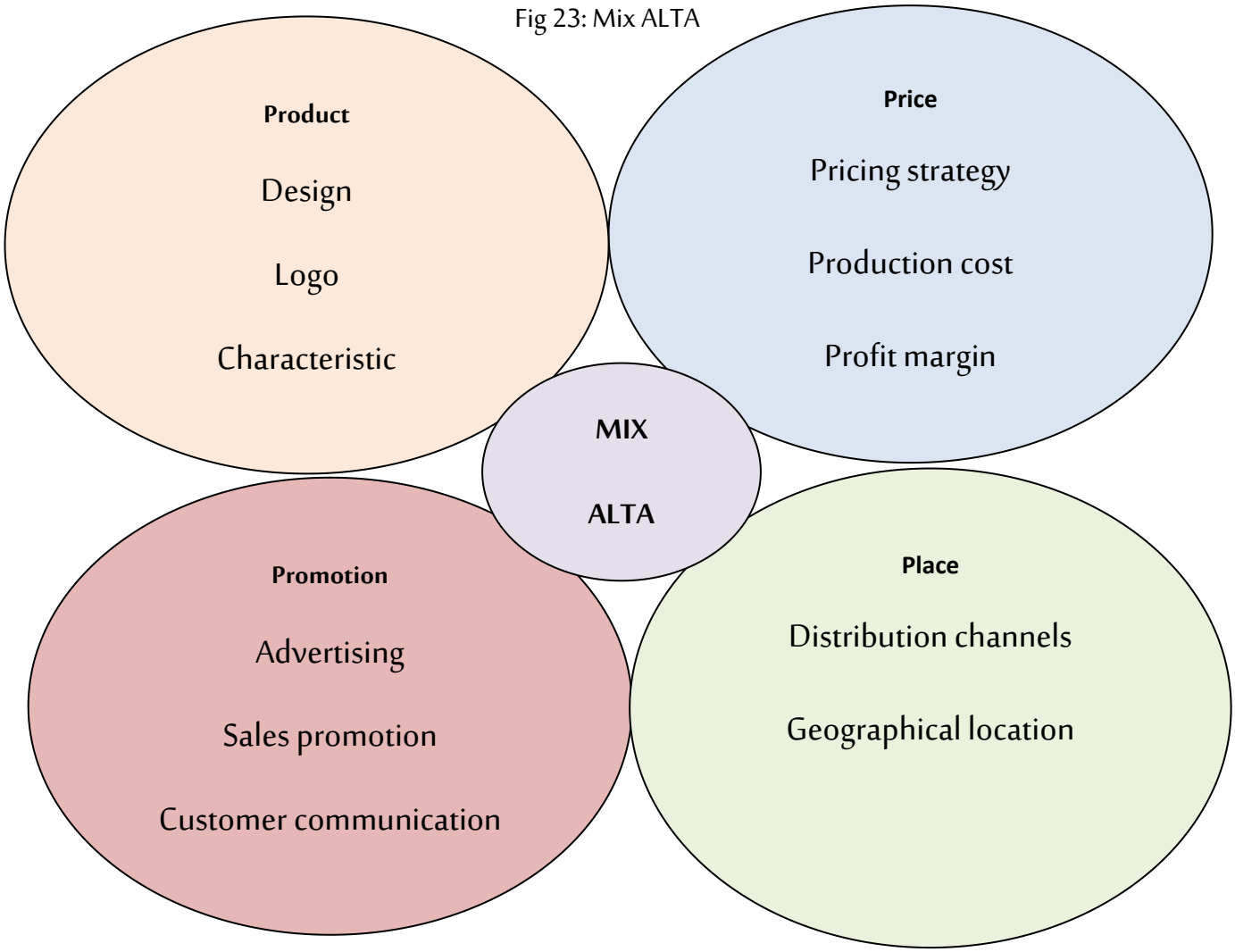
Fig 22: PESTEL analysis

P	Government regulations and standards regarding safety and emissions control Legislative measures promoting the use of CO detectors in residential and commercial properties Government initiatives to raise awareness about the dangers of CO poisoning
E	Economic conditions influencing consumer purchasing power and willingness to invest in safety devices Cost of manufacturing and distribution affecting product pricing and profitability Market demand influenced by disposable income levels and housing market trends
S	Growing awareness of the health risks associated with CO poisoning Increasing emphasis on home safety and security Changing lifestyles and preferences, such as the preference for smart home solutions
T	Advancements in sensor technology, allowing for more accurate and efficient CO detection Integration with IoT and smart home systems, enabling remote monitoring and control Development of mobile applications for real-time notifications and data analysis
E	Environmental concerns related to CO emissions and pollution Increasing demand for eco-friendly and energy-efficient products Adoption of sustainable manufacturing practices and materials
L	Compliance with safety regulations and standards Product labeling and certification requirements Potential liability and legal obligations for manufacturers and distributors

Source : Established by us

3.The marketing strategy

Fig 23: Mix ALTA



Source: established by us

3.1-Product's presentation

ALTA Protection" is a name that carries the meaning of "high protection" in Latin. This name was chosen deliberately to emphasize the exceptional level of protection that our product offers. We firmly believe that our product surpasses all others in terms of its advanced features and capabilities, making it the ultimate solution for safeguarding against carbon monoxide.

3.1.1-Logo:

The logo design of Alta, featuring a smooth and minimalist letter "A" with a full circle underneath, accompanied by a cloud of dots representing data, is a deliberate choice that embodies the core values and characteristics of the system. Here's an explanation of why this logo design was selected:

- ✓ **Modern and Minimalist:**

The modern and minimalist design approach reflects the contemporary nature of the Alta system. It conveys a sense of simplicity, elegance, and sophistication, aligning with the latest design trends. The clean lines and minimalistic elements communicate a streamlined and efficient approach to data analysis.

- ✓ **Symbolic Representation**:

The letter "A" in the logo represents the name of the system, Alta. Its smooth and sleek form adds a touch of fluidity and grace to the overall design. The circular shape beneath the "A" signifies completeness, unity, and harmony, reflecting the comprehensive nature of the system's data analysis capabilities.

- ✓ **Representation of Data:**

The cloud of dots behind the "A" symbolizes data. Dots are commonly associated with digital information and represent individual data points or data units. The cloud formation suggests the gathering, storing, and processing of data within the Alta system. It signifies the system's ability to collect and analyze vast amounts of data to extract valuable insights.

- ✓ **Black Color:**

The choice of an all-black color palette adds a sense of sophistication, professionalism, and authority to the logo. Black is often associated with power, elegance, and modernity. It creates a strong visual impact and ensures the logo stands out effectively in various applications and contexts.

- ✓ **Data Analysis and Utilization:**

The logo's design elements, particularly the circular shape and the cloud of dots, highlight the system's focus on data analysis and utilization. It conveys the message that Alta is capable of capturing, processing, and extracting meaningful insights from large volumes of data. The

combination of the letter "A" and the data symbolism suggests a seamless integration of advanced data analytics into the system's operations.

By designing the Alta logo with these considerations in mind, it effectively communicates the system's modern, minimalist, and data-centric approach. It captures the essence of the system's capabilities and creates a visually appealing and memorable representation of the brand.

Picture 1: Logo of ALTA Protection

Source: Established by us

3.1.2-Slogan:

"Where Safety Begins"is a powerful and impactful slogan that emphasizes the foundational role of ALTA Protection in creating a secure environment. It conveys our commitment to being the first line of defense against carbon monoxide dangers and highlights our dedication to prioritizing safety. The slogan evokes a sense of assurance, reliability, and trust, resonating with our target audience and instilling confidence in our product. It also reinforces the idea that safety is an ongoing process and encourages individuals to prioritize safety in all aspects of their lives. Overall, "Where Safety Begins" captures the essence of our mission and the peace of mind customers can expect when choosing ALTA Protection.

3.1.3The characteristics of the product

- ✓ **Automation:** The system incorporates automation capabilities to address CO leaks and controls various gas and ventilation appliances. It can automatically detect and cut off CO

leaks, as well as turn on/off gas and ventilation devices as needed. This automation ensures proactive safety measures and efficient management of gas-related appliances.

- ✓ **IoT and Artificial Intelligence:** ALTA utilizes advanced technologies such as the Internet of Things (IoT) and Artificial Intelligence (AI). These technologies enable seamless connectivity, data analysis, and intelligent decision-making within the system. By leveraging IoT and AI, ALTA enhances its capabilities in detecting CO leaks, optimizing automation processes, and providing personalized user experiences.
- ✓ **Software and Mobile Application**: The ALTA system is accompanied by a comprehensive software platform and a dedicated mobile application. This software and application are responsible for managing notifications, providing remote control and monitoring capabilities, and facilitating user interaction. Users can access the system's features, receive alerts, and control various aspects of their home or location remotely, all through the user-friendly interface of the application.
- ✓ **Notifications**: ALTA provides real-time notifications to keep users informed in case of any potential dangers or events. Users receive alerts on their mobile devices, keeping them updated on the status of their home or location. These notifications serve as an important communication channel, enabling users to take necessary actions promptly.
- ✓ **Integration with Civil Protection**: The ALTA system is seamlessly integrated with the Civil Protection authorities in case of unmanageable danger situations. This integration ensures that when a critical event occurs, such as a severe CO leak or an emergency situation, the system can immediately notify and connect with the appropriate Civil Protection services.
- ✓ **LED Indication**: The ALTA system features LED lights that provide visual identification of the current status of the location and air quality. These LEDs serve as a convenient way for users to quickly assess the conditions and ensure a safe environment.
- ✓ Easy installation: Our product stands out for its easy installation, whether it's for the central unit or the electrovalve. This feature enables users to quickly benefit from the protection offered by our system, without having to deal with complex or laborious installation processes.

3.2- The price

Our pricing strategy is based on a comprehensive economic analysis and follows a formal approach to ensure optimal market positioning. We have incorporated the following elements into our pricing strategy:

-Cost Calculation and Profit Margin: We have conducted a meticulous cost analysis, taking into account all relevant factors involved in the production and delivery of our product. This includes material costs, manufacturing expenses, overheads, and operational costs. Based on these calculations, we have established a profit margin that allows for sustainable business operations while remaining competitive within the market.

-Benchmarking and Competitive Analysis: By employing the benchmarking method, we have compared our product pricing with similar safety-oriented products, such as security cameras and surveillance DVRs. This analysis ensures that our pricing is aligned with market standards and customer expectations, reinforcing the importance and value of our offering.

-Value-Based Pricing: Our pricing strategy also considers the unique value proposition of our product. We evaluate the distinct features, benefits, and level of protection our product provides compared to alternative solutions. This assessment allows us to set prices that reflect the value customers can derive from our offering, ensuring a fair and competitive market position.

-Market Research and Customer Perception: Through extensive market research, including customer surveys and feedback, we have gained valuable insights into customer preferences and their willingness to pay. This data-driven approach allows us to establish a price range that aligns with customers' perceived value, ensuring their acceptance and satisfaction which is called the psychological price.

By incorporating these factors, we have devised a pricing strategy that balances customer affordability, market competitiveness, and profitability. This approach allows us to effectively communicate the value of our product while meeting the financial goals of our business.

3.3- The place

The distribution strategy for Alta Protection's product involves a multi-channel approach, incorporating both online and offline channels.

- **Online Channels**: The company's website serves as a central hub where customers can learn about the product, its features, and benefits. It also allows customers to make direct purchases online, providing convenience and accessibility. Additionally, Alta Protection can leverage e-commerce platforms, such as Amazon or other online marketplaces, to expand its reach and tap into a larger customer base. Once customers make a purchase through the company's website, Alta Protection will ensure timely and efficient delivery of the product to their doorstep. Moreover, to provide a seamless customer experience, the company will offer installation services to customers and residents in Bordj BouArreridj and its surrounding areas, who require assistance in setting up and configuring the product. This personalized approach enhances customer satisfaction and ensures the proper functioning of the CO detection system.
- **Offline Channels**: To further extend our market presence, Alta Protection can establish partnerships with retail stores and distributors. This enables the product to be showcased in physical locations, providing customers with the opportunity to experience the product firsthand and seek expert advice from knowledgeable sales staff. To streamline the installation process and provide a comprehensive solution to customers, these partnerships will ensure that trained professionals are available to handle the installation, thereby guaranteeing a seamless experience for customers. By collaborating with reputable sellers, Alta Protection can leverage their expertise and establish a reliable network of installation service providers and build trust and credibility among customers

3.4- The promotion

Regarding communication with customers, we will utilize various means to attract consumers to our products, such as:

-Promotional activities: We will participate in trade fairs and events to introduce our products to a wider audience. This allows us to showcase the unique features and benefits of our products and engage directly with potential customers.

-Artificial intelligence (AI): Intelligent chatbots powered by AI technology have become increasingly popular in customer service and marketing. These chatbots can interact with customers in real-time, answering inquiries, providing assistance, and even engaging in natural conversations, also in the context of marketing, AI allows us to gather and analyze vast amounts of customer data, providing valuable insights into consumer behavior and preferences.

-Advertising campaigns: We will design and implement targeted advertising campaigns across various channels, including print media, online platforms, and social media. These campaigns will create brand awareness among the target market.

-Digital marketing: We will leverage digital marketing strategies, including search engine optimization (SEO), pay-per-click (PPC) advertising, and social media marketing. This will enable us to reach a broader online audience, increase website traffic, and generate leads.

-Content creation: We will develop informative and engaging content, such as blog articles, sharing videos on YouTube, Instagram and tiktok, and infographics, to educate customers about the importance of CO detection and the unique features of our products. This content will be shared on our website, social media platforms, and other relevant channels to establish thought leadership and build credibility.

-Public relations: We will engage in strategic public relations activities to enhance our brand image and reputation. This includes media outreach, press releases, and collaborations with influencers or industry experts to generate positive publicity and increase brand visibility.

-Customer engagement: We will prioritize customer engagement and satisfaction by providing excellent customer service, promptly addressing inquiries and concerns, and offering product demonstrations or trials. This proactive approach will foster trust and loyalty among our customers.

3.5-The marketing objectives

Table 5: The marketing Objectives

Objectives	KPI
Increase brand awareness: Enhance the visibility and recognition of ALTA within the target market by implementing effective marketing campaigns, advertising, and brand building activities.	• Number of brand mentions or impressions on social media platforms • Website traffic and unique visitors • Social media followers and engagement metrics (likes, shares, comments) • Brand recognition surveys or studies
Generate leads and sales: Drive customer interest and conversion by attracting qualified leads and increasing sales through targeted marketing efforts.	• Number of leads generated through marketing campaigns • Conversion rate from leads to customers • Total sales revenue • Average order value or customer lifetime value
Expand market share: Increase our market presence and capture a larger share of the CO detector market by positioning our product as a competitive and preferred choice among consumers.	• Market share percentage in the CO detector market • Number of new customers acquired compared to competitors • Customer retention rate
Build customer loyalty: Foster strong relationships with customers by delivering exceptional product quality, providing excellent customer service, and implementing loyalty programs	• Customer satisfaction ratings and feedback • Customer retention rate and repeat purchase rate • Net Promoter Score (NPS) or customer advocacy metrics • Referral program participation and results
Enhance online presence: Develop a robust online presence through a well-designed	• Website conversion rate (visitors to leads or customers)

website, social media platforms, and online advertising to engage with our target audience, showcase product features, and facilitate online sales.	• Social media engagement metrics (likes, shares, comments) • Online sales revenue or conversion rate • Search engine rankings and visibility
Establish partnerships and collaborations: Explore strategic partnerships with distributors, retailers, and other relevant stakeholders in the industry to expand the distribution network and reach a wider customer base.	• Number of strategic partnerships established • Sales or revenue generated through partnerships • Partner satisfaction ratings
Gather customer feedback: Implement mechanisms to collect feedback from customers to continuously improve product offerings, address customer concerns, and enhance overall customer satisfaction.	• Customer satisfaction ratings and feedback surveys • Response time to customer inquiries or support tickets • Percentage of customer issues resolved on first contact • Product reviews and ratings

Source: Established by us

Fourth axe: Production and organization plan.

1-The production process

1.1-The raw materials

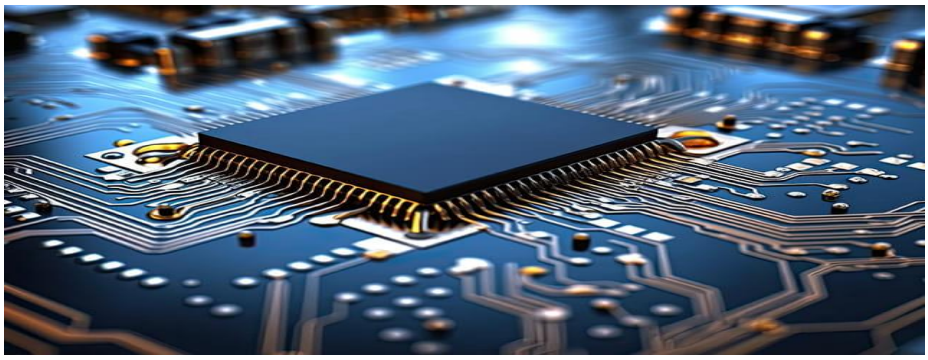
1.1.1-The Printed Circuit Board (PCB)

The printed circuit board (PCB) is an essential component in the production of our products. As a raw material for electronic assembly, the PCB plays a fundamental role in the connectivity and overall functioning of the devices. In our case, we will produce these PCBs, which involves the upstream integration of PCBs.

The upstream integration of PCBs is a crucial step in the production of our electronic devices. It entails the careful design and manufacturing of high-quality PCBs to ensure the reliability, performance, and durability of the final product.

Upstream integration offers numerous advantages, including improved quality control, cost reduction, greater flexibility, innovation opportunities, direct access to the required raw materials, and enhanced supply chain management. These benefits contribute to strengthening the company's competitiveness and ensuring better customer satisfaction. By ensuring that the PCBs are well-designed and meticulously assembled, Alta Protection offers a high-quality system that meets the needs and expectations of users.

Picture 2: The PCBA



Source:https://www.element.com/connected-technologies/printed-circuit-board-pcb-testing, consulted on 17-06-2023

1.1.2-The ABS plastic

ABS plastic is another essential raw material in the production of our products, specifically used for the manufacturing of casings. ABS, which stands for "Acrylonitrile Butadiene Styrene," is a thermoplastic polymer known for its strength, durability, and ease of processing.

The use of ABS in the production of casings offers numerous advantages. Firstly, its high mechanical strength effectively protects the internal components of the products, making them less vulnerable to potential shocks and impacts. This ensures proper protection for sensitive electronic circuits and contributes to prolonging the lifespan of the products.

Additionally, ABS exhibits good resistance to both high and low temperatures, which is crucial for ensuring the proper operation of the devices in various environmental conditions. It also maintains its dimensional stability, allowing the casings to retain their original shape and dimensions over time, preventing any issues with component fitting or alignment.

In terms of finishing, ABS offers versatile options. It can be easily painted, coated with a special finish, or textured to enhance the appearance and user-friendliness of the casings. This allows us to deliver products with a polished and professional aesthetic while maintaining a scratch-resistant surface that is easy to maintain.

Picture 3: The ABS plastic

Source: https://french.polymer-plastic.com/supplier-386944-abs-plastic-raw-material, consulted on 17-06-2023

1.1.3-Metals (such as aluminum and stainless steel):

These metals are utilized for structural components, connectors, and mounting supports. Aluminum is known for its lightweight yet durable properties, making it suitable for various applications. Stainless steel offers high corrosion resistance and strength, making it ideal for components that require durability and longevity.

1.1.4-Electronic components:

This category includes a wide range of components that are crucial for the functionality of electronic devices. It encompasses microcontrollers, sensors, transistors, diodes, resistors, capacitors, and more. These components enable the devices to process data, perform specific functions, and interface with other systems.

1.1.5-Cables and wires:

Cables and wires play a vital role in connecting different components within the device, facilitating electrical connections and signal transmission. They ensure the proper flow of electricity and data between various parts of the system, allowing for seamless communication and operation.

1.1.6-Batteries:

Batteries are employed to power wireless devices or serve as backup power sources during electricity outages. They provide the necessary energy for the device to operate independently, ensuring continuous functionality and reliability.

1.1.7-Metal valves

Such as brass or stainless steel valves, are selected for their robustness, corrosion resistance, and ability to withstand high-pressure and high-temperature conditions. These valves are designed to control the flow of gas, allowing or preventing the passage of gas through the system.

1.1.8-Software and firmware:

Software and firmware are integral to the programming and operation of the devices. They control and manage the functionality, features, and user interface of the products. Software programs are

responsible for tasks such as data processing, user interaction, and communication protocols, while firmware refers to embedded software that controls the device's hardware components.

These materials collectively contribute to the construction, functionality, and performance of ALTA PROTECTION system's products, ensuring their effectiveness in meeting the intended purposes and delivering a seamless user experience.

1.2-The process of production

Our production process is characterized by two main phases: product manufacturing and software development. The product manufacturing phase involves the production of physical goods, including the assembly of components and the integration of various materials. The software development phase focuses on the creation and enhancement of software and mobile applications that complement and enhance the functionality of our products. These two interconnected phases contribute to the overall value proposition of our offerings, providing customers with high-quality products integrated with advanced software capabilities.

1.2.1-The product manufacturing

The production process of ALTA PROTECTION system's devices can be divided into the following steps:

1.2.1.1Product design and development: The first step is to design the product. This involves sensors, control panels and the electrovalve. The design must consider the product's functionality, usability, and aesthetics.

1.2.1.2The PCB manufacturing

- **-PCB design**: also we have the PCB design, which is carried out by electronics engineers. They use computer-aided design (CAD) software to create an electrical schematic and design the printed circuit board based on the specifications of the final product.
- **-PCB manufacturing**: Once the design is completed, the PCB needs to be manufactured. This involves selecting a base substrate (usually fiberglass or epoxy resin) onto which

copper layers will be deposited to create the conductive traces of the circuit. The PCB manufacturing process can be done in-house or outsourced to specialized manufacturers.

- **Component assembly**: Once the PCB is manufactured, it is ready to be used for electronic assembly. Electronic components such as resistors, capacitors, chips, and other elements are then soldered onto the PCB using automated assembly machines or manually, depending on the complexity of the product and the production volume.
- **Testing and quality control**: After component assembly, each printed circuit board undergoes rigorous quality testing to ensure its proper functioning. Continuity tests, short-circuit tests, component operation tests, and other checks are performed to detect any errors or defects.

1.2.1.3-The enclosure manufacturing

- **-Enclosure design**: The process begins with the design of the enclosure, which is carried out by engineers specialized in product design. They use computer-aided design (CAD) software to create the enclosure design, taking into account dimensions, features, and aesthetic requirements.
- **-Material selection**: Once the design is completed, appropriate materials are selected for the fabrication of the enclosure. This may include the ABS.
- **-Injection molding**: Once the molds are ready, the plastic injection molding process begins. The plastic material is heated and melted, and then injected into the molds under high pressure. The plastic quickly solidifies and takes the shape of the enclosure. This process is repeated for each enclosure to be manufactured.
- **-Demolding and finishing**: After the plastic has cooled and solidified, the enclosures are demolded from the molds. Finishing operations may be carried out, such as removing any burrs, smoothing surfaces, and adding specific product details or markings.

1.2.1.4- Component Assembly: Once the enclosures are manufactured, various electronic components, such as printed circuit boards, sensors, batteries, and connectors, are assembled

inside the enclosures. This may involve component soldering, cable connection, positioning elements within the enclosure, and securing them in place.

1.2.1.5-Quality testing: Once the product is manufactured, it is tested to ensure that it meets all quality standards. This testing may involve a variety of quality control measures to ensure that its products meet all applicable safety standards. These measures include:

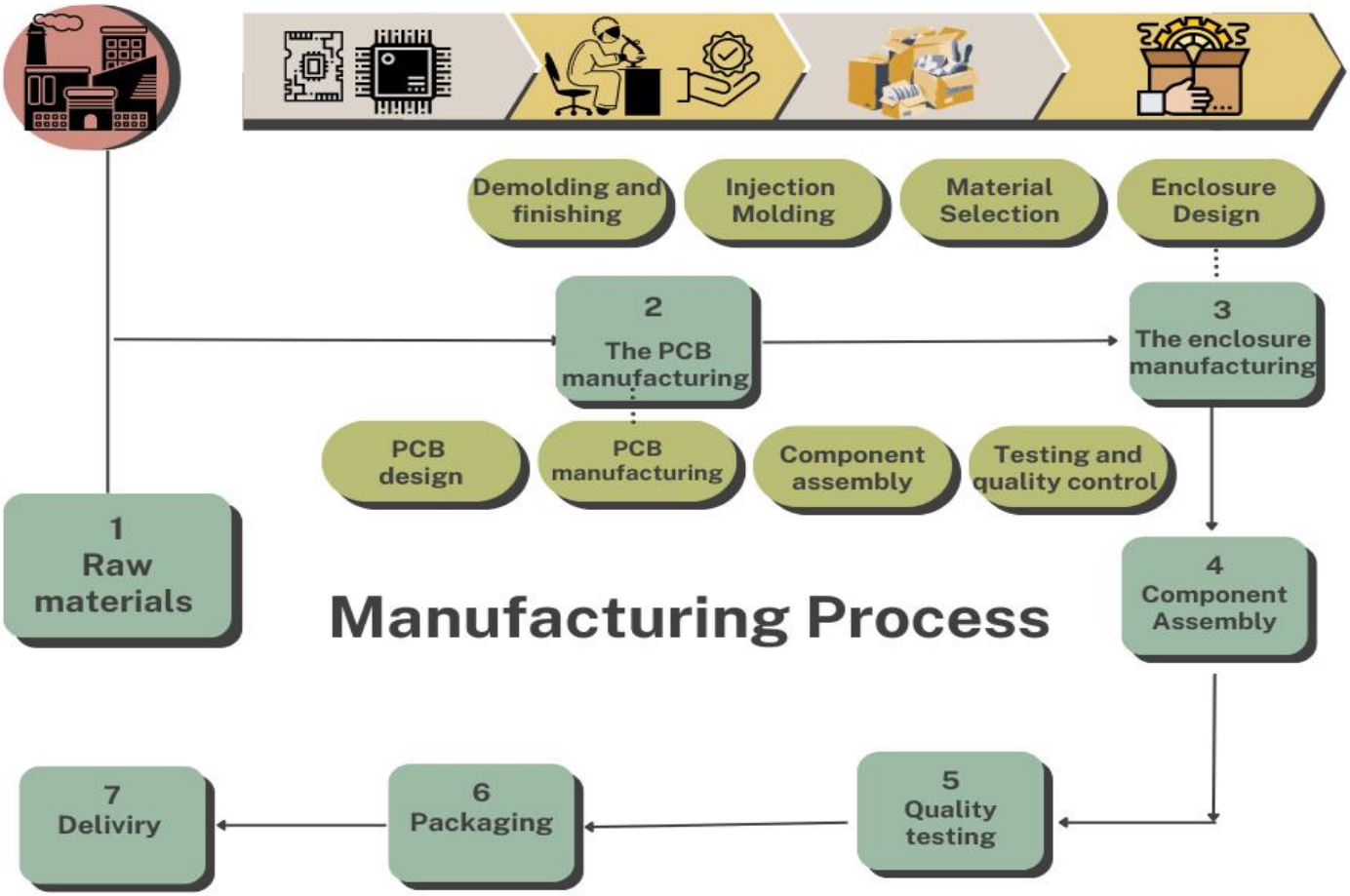
- Physical inspection: The products are inspected visually for defects.
- Functional testing: The products are tested to ensure that they function properly such as testing the product's sensors and alarms.
- Environmental testing: The products are tested in a variety of environmental conditions, such as extreme temperatures and humidity.
- Hazard analysis and critical control points (HACCP): A HACCP plan is used to identify and control potential hazards in the production process.

1.2.1.6-Packaging:The packaging process of ALTA PROTECTION products includes the following steps:

- **Packaging preparation**: Once the products are manufactured and tested, they are ready to be packaged. This step involves preparing the packaging materials, such as cardboard boxes, pouches, labels, user manuals, and other elements necessary for product packaging.
- **Identification and labeling**: Each product is uniquely identified using a code or serial number. Labels are attached to the packaging to indicate the model, serial number, features, and other important information for product identification.
- **Placing in the packaging**: The products are carefully placed in their respective packaging. This may include inserting the product into a cardboard box, using padding to ensure adequate protection, and adding any additional accessories or cables as necessary.
- **Documentation**: User manuals, installation guides, and other relevant documents are added to the packaging. These documents provide detailed instructions on product use, installation, and maintenance to assist users in getting the most out of the product.

- **Closure and sealing**: Once the products and packaging documents are added, the packaging is securely closed and sealed. This may involve the use of adhesive tape, security seals, or other appropriate methods to ensure the packaging remains intact during transportation and handling.

Fig 24: The manufacturing process



Source: Established by us

1.2.2-Software Development:

ALTA PROTECTION places a strong emphasis on software development for our security devices. This involves a separate production process where software engineers design and develop the firmware and mobile applications that enable users to control and monitor their security systems.

1.2.2.1-Backend Development:

Node.js: Node.js is a powerful JavaScript runtime environment that allows for server-side development. We chose Node.js because of its event-driven, non-blocking I/O model, which makes it lightweight and efficient for handling concurrent requests.

Express.js: Express.js is a fast and minimalist web application framework for Node.js. It is known of its simplicity and flexibility in building robust RESTful APIs. It provides essential features like routing, middleware support, and easy integration with other libraries.

MongoDB: MongoDB is a NoSQL document database that offers scalability, flexibility, and seamless integration with JavaScript. MongoDB have an ability of handling unstructured data, its ease of use with JSON-like documents, and its support for horizontal scaling in case of future growth.

1.2.2.2-Frontend Development:

React.js: React.js is a popular JavaScript library for building user interfaces. It is characterized by its component-based architecture, which promotes reusability and modularity. It allows for efficient rendering of UI components, resulting in a smooth and responsive user experience.

JSX: JSX is a syntax extension for JavaScript that allows you to write HTML-like code within JavaScript files. It simplifies the process of defining and rendering UI components in React, making the code more readable and maintainable.

React Router: React Router is a library that provides routing capabilities in React applications. It is used to handle navigation and create multiple pages within the application.

Axios: Axios is a popular HTTP client library that simplifies sending asynchronous HTTP requests from the frontend. It is utilized to make API requests to the backend, fetching and updating data seamlessly.

State Management (e.g., Redux): For managing complex application states and data flow, a state management library like Redux it is incorporated. Redux allows for centralized state management, making it easier to track and update data across various components.

These technologies were chosen based on their maturity, community support, and suitability for building scalable and efficient web applications. The combination of React, Node.js, Express.js, and MongoDB (the MERN stack) offers a robust and modern development ecosystem that facilitates rapid development, code reuse, and performance optimization

The technologies used in the Alta system, including the MERN stack (MongoDB, Express.js, React.js, and Node.js), are well-suited for real-time data monitoring and processing scenarios like gas level detection. Here's why these technologies are a good fit for this kind of project:

Real-time Data Processing:

Node.js: Node.js is known for its event-driven, non-blocking I/O model, making it highly efficient for handling real-time data streams. It can handle concurrent connections and process data asynchronously, which is crucial for continuously receiving and processing gas level data in real-time.

Scalability and Performance:

MongoDB: MongoDB is a NoSQL document database that can handle large volumes of data with high read and write throughput. It provides horizontal scalability and supports sharding, allowing the system to scale as the data grows. This is beneficial for a gas level monitoring system that generates a continuous stream of data.

Reactivity and User Interface:

React.js: React.js is a component-based JavaScript library that enables the creation of dynamic and responsive user interfaces. With its virtual DOM and efficient rendering algorithm, React.js ensures a smooth and fast user experience, even when continuously updating the gas level readings in real-time.

Data Visualization:

React.js: React.js, along with its rich ecosystem of UI libraries and charting frameworks (such as D3.js or Chart.js), allows for the creation of interactive and visually appealing data visualizations.

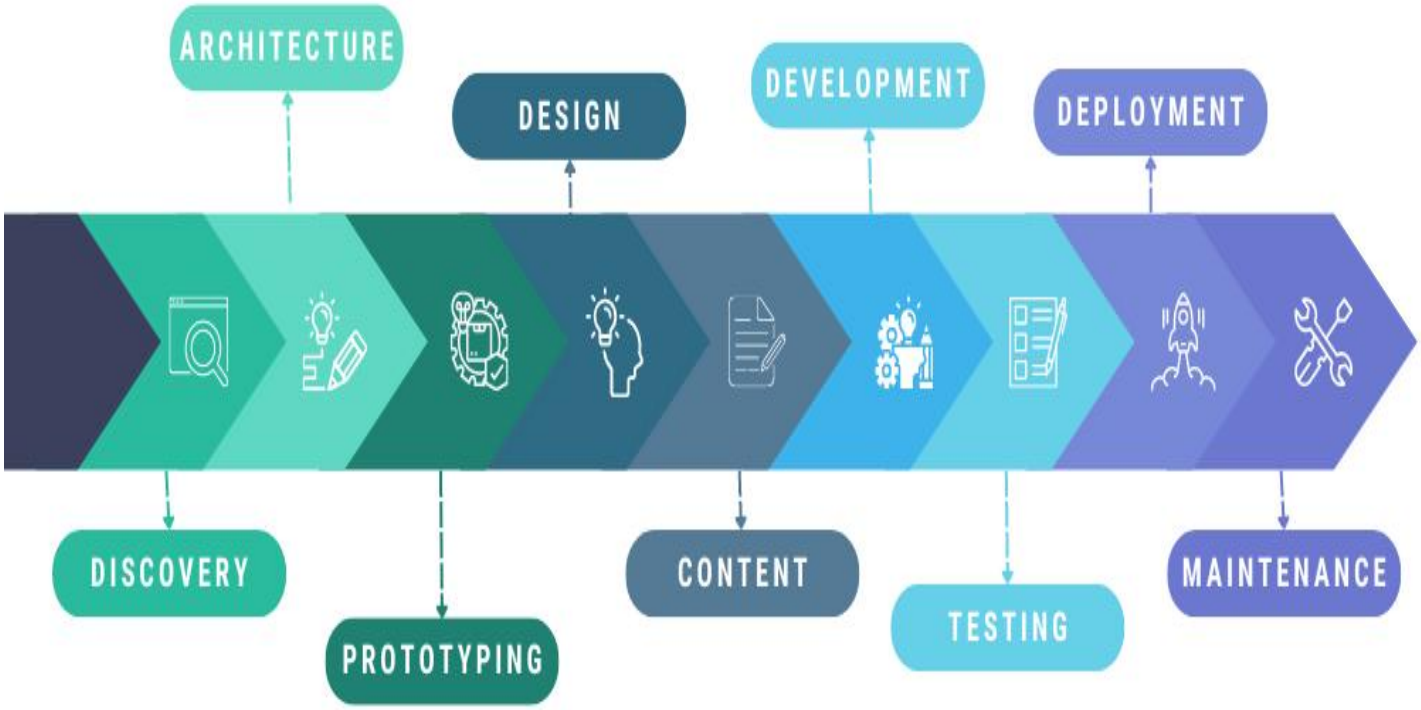
Gas level readings can be represented in real-time charts, graphs, or visual indicators to provide meaningful insights to users.

1.2.2.3-Full-Stack Development:

MERN Stack: The MERN stack provides a consistent and unified development environment across the entire project. With JavaScript as the primary language, developers can seamlessly work on the frontend and backend, sharing code, libraries, and even models between the different layers of the application. This streamlines the development process and reduces development time and complexity.

Overall, the MERN stack, with its real-time capabilities, scalability, performance, and reactivity, is well-suited for building a gas level monitoring system that requires continuous data processing, visualization, and user interaction. It offers a comprehensive set of tools and technologies to handle the demanding nature of real-time data monitoring and ensure a responsive and efficient user experience.

Fig 25: The application mobile development process



Source: Established by us

2-The procurement

2.1-The machines and equipments

In order to ensure the success of the production process, ALTA PROTECTION utilizes multiple machines. These machines play a crucial role in achieving efficient and effective manufacturing operations.

2.1.1-Surface Mount Technology (SMT) Machines:

SMT machines are used for the assembly of electronic components onto printed circuit boards (PCBs). They accurately place and solder surface-mount components, such as resistors, capacitors, and integrated circuits, onto the PCBs.

Picture 4: SMT Line Production

Source: https://www.smtfactory.com, consulted on 25-06-2023

2.1.1.2-The technical sheet

Table 6: The technical sheet of SMT line production

No	Product	Description	Picture	Qty	Unit price	Total amount
01	ETA Solder Paste Mixer	For solder paste mixing		1	101809.275	101809.275
02	ETA Semi-auto Stencil Printer P12	The solder paste printing to the PCB board		1	705877.64	705877.64
03	SAMSUNG/HANWHA Pick and place	Mount component		1	10588164.6	10588164.6

	machine SM482PLU SMT feeder 8mm SMT feeder 12mm SMT feeder 16mm	to PCB board		10 5 5	43438.62 57013.194 62443.022	 434386.24 285065.97 312215.11
04	ETA Reflow Oven E8	Welding PCB to make parts fixed		1	2579168.3	2579168.3
05	ETA SMT Conveyor 1m	Transport for PCB		2	105881.646	211763.292
06	ETA Insert Line 9m	Insert components to PCB board		1	439816.068	439816.068

07	ETA Wave Solder Machine Loader	Transport PCB automatically enter the wave soldering machine, save labour		1	105881.646	105881.646
08	ETA Wave Soldering Machine Acrab 350	For heating and soldering insert parts		1	3257896.8	3257896.8
09	ETA Wave Solder Machine Unloader	Transport PCB automatically enter the welding line, save labour		1	105881.646	105881.646

10	ETA LED Aging Stand , with 5 pcs electric box	For aging test led lights		5	434386.24	2171931.2
11	ETA Assembly Belt Conveyor 10m	For assembly components, workers sit beside		1	610855.65	610855.65
		Total				21910713.437

Source:Internal company document

2.1.2-Injection molding machine

This machine is used for the injection molding process, which is employed in the production of plastic components. They melt the plastic material and inject it into molds to create the desired shape and form of the enclosure.

Picture 5: Injection molding machin

Source: https://www.dkmalgeria.com/machine.html, consulted on 25-06-2023

2.1.1.2-Technical sheet

Table 7: The technical sheet of the injection molding machine

Model	Injection capacity(g)				Tie bar distance	Qty	Unit Price (DA)	Total Price (DA)
	A	B	C	D	mmx mm	SET		
DKM-130SV	177	216	248	/	417*417	1	3107762.0558	3107762.0558
STL-300GE	Auto loader					1	54298.28	54298.28
SC-08WCI	Water Chiller					1	427598.955	427598.955
EG11/HW1502*1	Air Compressor Group					1	542982.8	542982.8
SHD-50KG	Hopper Dryer					1	47510.995	47510.995
SZ-10	Cooling tower					1	108596.56	108596.56
SFS-300	Crusher					1	183256.695	183256.695
SHS-50	Mixer					1	115383.845	115383.845
					TOTAL	**8**	**4587390.1858**	**4587390.1858**

Source: Internal company document

2.2-The equipments

- Transportation equipment:For transportation purposes, a Mercedes Sprinter van can be an excellent choice. The Mercedes Sprinter is a versatile and reliable commercial vehicle that offers several advantages for transporting goods. It is widely recognized for its durability, spaciousness, and efficient design.
- Office furniture: This includes desks, chairs, storage shelves, meeting tables and cabinets.

- Computers and peripherals: It's important to have desktop computers or laptops for employees, as well as peripherals such as printers, scanners, and copiers.
- Telephones and communication systems: Landline phones or VoIP telephony systems may be necessary for internal and external communication.
- Stationery supplies: This includes pens, pencils, markers, paper clips, staplers, scissors, binders, notepads, envelopes, paper, ink cartridges.
- Productivity software: Office suites like Microsoft Office, project management and collaboration software, as well as accounting and management tools, are essential for daily operations.

2.3-Payment Methods:

Bank Transfer: Bank transfer is one of the most common methods. Funds are transferred directly from the company's account to the supplier's account.

Cheque: Cheques are still used to make payments to suppliers. The company issues a cheque in the name of the supplier, which can then be cashed at their bank.

2.4-Receiving Method:

The method of receiving our raw materials will depend on the logistics and specific processes of our company. However, here is a general description of the common steps involved in receiving raw materials:

- Reception of the carrier or the product: When the carrier arrives with the goods, it is important to welcome them and facilitate the unloading process by providing necessary information about the delivery location and internal procedures.
- Search for the order: Once the carrier or the goods have arrived, it is crucial to locate the corresponding order in the inventory management system or order tracking documents. This ensures that the correct goods are received and allows for appropriate verifications.
- Verification of product identity and quantity: Before signing the Delivery Note, it is important to verify that the received product matches the ordered specifications in terms of identity (reference, lot number, etc.) and quantity.

- Signing the Delivery Note (potentially with a note of reservation): Once the verification is completed and in case of conformity, the Delivery Note can be signed to acknowledge the receipt of the goods, then, maintain accurate documentation of the receipt process, including receiving slips, invoices, certificates of compliance, quality control reports, etc.
- Qualitative verification of the product: In addition to identity and quantity checks, it is also important to perform a qualitative verification of the product. This may include visual inspections, compliance testing, measurements, or other appropriate methods to ensure that the product quality meets the standards and expectations.
- Storage: Raw materials must be stored under appropriate conditions to preserve their quality. This involves storing them in suitable locations, taking into account the specific requirements of each raw material

3-Workforce of the project

Having a qualified and well-trained workforce is crucial to ensure the quality and performance of ALTA PROTECTION systems.

Manager

- Defining the goals and objectives of the company, and developing strategies to achieve them.
- Making critical decisions regarding the company's operations, investments, financials, and resource allocation.
- Building and maintaining relationships with stakeholders.
- Overseeing financial performance, budgeting, and ensuring the company's financial health and sustainability.
- Ensuring compliance with legal and regulatory requirements, as well as maintaining ethical standards and good corporate governance practices.

Office assistant

- Providing general administrative support to the office or department, such as answering phone calls, managing emails, scheduling appointments, and maintaining office supplies.
- Organizing and maintaining physical and digital files, including filing documents, scanning, and photocopying as needed.
- Drafting and editing correspondence, memos, and other documents. Assisting with internal and external communication, including handling mail and managing email correspondence.
- Accurately entering data into spreadsheets or databases, maintaining records, and ensuring data integrity.
- Assisting with the coordination and organization of meetings.

Commercial agent

- Identifying potential customers and generating leads
- Presenting the company's products or services to potential clients, showcasing their features and benefits, and addressing any questions or concerns.
- Conducting market research to identify market trends, customer preferences, and competitive landscape
- Keeping track of sales activities, maintaining sales records and reports

Web developer

We need 2 web developers for:

- Designing, coding, and implementing websites and web applications using programming languages such as HTML, CSS, and JavaScript.
- Front-end Development by creating user interfaces and implementing visual designs using front-end technologies and frameworks such as React, Angular, or Vue.js.
- Back-end Development by building server-side logic, databases, and APIs to support the functionality of web applications using programming languages such as Python, PHP, or Node.js.

- Staying updated with the latest web development technologies, trends, and best practices through self-learning, training, and professional development.
- Identifying and resolving technical issues or challenges related to web development, ensuring smooth operation and functionality.

Hardware engineer

We need 3 hardware engineers for:

- Designing and developing hardware components and electronic equipment (schematics and routing).
- Regular technological and technical monitoring.
- Conducting all necessary tests and trials.
- Analysis of test results and writing test reports.
- Identifying improvements to be made to the product/process.

Electronics technicians

We need 6 electronics technicians for:

- Installing, repairing, and maintaining electronic equipment and systems.
- Testing and diagnostic procedures to identify problems and determining the cause of malfunctions in electronic devices.
- Assembly and calibration of electronic components and systems.
- Documentation and Reporting detailed records of their work, including equipment specifications, repair procedures, and testing results.

4-Key partners

Table 8: Key partners

Fourth axe: Production and organization plan

Partners	Missions
Sonelgaz	It is our first partner; we sign a contract for the installation of our system in households, aiming to ensure the highest quality of installation and delivering exceptional services.
Government	The government can be a valuable partner by providing regulatory support and creating a favorable business environment. They can implement policies promoting energy-efficient systems and offer financial incentives to encourage homeowners. Government endorsement enhances credibility, fosters partnerships with stakeholders, and facilitates knowledge-sharing in the energy sector.
Technology Partners	Collaborating with technology partners specializing in security systems, software development, or IoT (Internet of Things) solutions can enhance the project's capabilities.

Suppliers	-SMT Line machine: the company ETA-CHINA- -Injection plastic machine: the company DKM –CHINA- -ABS plastic and the others raw materials: **HAMTECH Distributor** -Office furniture: **"PyramideBureautique** -Computers and peripherals, telephones and communication systems: "**TECHNO Stationery"** -Stationery supplies and productivity software: **"Africapap.**
Distributors	Distribution Partners: Partnering with distributors or resellers who have an established network and expertise in the security industry can help reach a wider customer base and ensure efficient distribution of the "Alta Protection" products.
Fireman	Our partnership with the firefighters is facilitated through our mobile application, which serves as a vital communication channel during emergency situations. The application is designed to promptly alert and signal the firefighters when an unmanageable danger is detected, enabling them to take immediate action. Their timely intervention is crucial in

	ensuring the safety and protection of individuals and property.
Investors	By partnering with investors, we can access not only financial resources but also valuable expertise, networks, and support, which can significantly accelerate our project's growth and increase our chances of achieving sustainable success.

Source: Established by us

Fifth axe

The financial plan

1. Costs and Expenses

The expenses incurred in carrying out a project are referred to as charges, which include costs related to human resources, materials, equipment, external services, etc. As for costs, they represent specific financial amounts associated with each expenditure made to accomplish different project tasks. These costs can be divided into direct costs (directly related to project implementation) and indirect costs (related to infrastructure, administration, etc.).

Cost control in a project is of crucial importance to ensure its success. It enables effective financial management by providing an accurate estimation of initial costs, monitoring expenses throughout the project, and controlling deviations between actual costs and budgeted amounts. For ALTA, we have identified the following possible charges to carry out the project:

- **Establishment fees**: These fees include the costs associated with setting up the business, such as registration fees, notary fees, administrative fees, and company incorporation fees.

• **Rental or purchase of premises**: The expenses associated with leasing an industrial space or purchasing land or a building for the project's establishment.

• **Rental charges:** In addition to the base rent, certain rental charges may be required to cover the operating expenses of the space, such as heating, electricity, water, etc. Additional fees may also include charges for supplementary services like internet access, maintenance of facilities, etc.

• **Machinery**: The costs related to the purchase or leasing of specialized machines required for the project, such as manufacturing machines, assembly lines, industrial robots, or production tools.

• **Raw material purchases**: The costs of purchasing the necessary raw materials for the manufacturing or production of the final product. This may include raw materials such as metal, wood, plastic, glass, etc.

• **Office equipment**: Expenses associated with the purchase of office equipment, such as computers, printers, scanners, photocopiers, telephones, faxes, calculators, etc.

• **Website/application design and development**: This includes creating prototypes, coding development, implementing features, integrating databases, and other technical aspects. The cost can vary depending on the size and complexity of the programming.

• **Personnel expenses**: The costs associated with compensating our team should be included in our financial analysis. This includes salaries, social security contributions, and employee benefits.

• **Costs related to site promotion**: Online advertising, SEM campaigns, social media sponsorship, etc., including expenses for organizing launch events, producing communication materials, etc.

To better organize and forecast the expenses over a period of 3 years, we have prepared the following tables:

Table 9: the different costs of ALTA

The charges	Unit price	duration	Total	N+2	N+3
Location	150000	12	1800000	1800000	1800000
Industrialmaterials	27 000 000	1	27000000	27000000	27000000
Raw materials	700000	1	700000	900000	1000000
Informationalmaterials	100000	3	300000	500000	550000
Office supplies	220000	1	220000	270000	300000
Marketing costs	60000	12	720000	1000000	1600000
Packaging	9000	10	90000	140000	200000
Wages	437000	12	5244000	5844000	6500000
Personal charges	152950	12	1835400	2045400	2275000
Electricity/gas	300000	12	3600000	4200000	5000000
Internet	2000	12	24000	24000	24000
Telephone bill	1000	4	4000	4000	4000
Play sotre and google (app hosting)	12289	12	147468	147468	147468
Google (websitehosting)	5000	1	5000	5000	5000
Total			41669868	43879868	46405468

Source: Established by us

According to the table above, we have estimated the possible expenses for the implementation of our project over a period of 3 years.

- In the first year, we can observe that most of the expenses are spread over 12 months, with a total of 41,669,868 Algerian dinars (da).
- For the following years, and according to the lifecycle of any project, expenses increase with the growth of the activity.

Table 10: Investment and funding

INVESTISSEMENTS TOTAL	Total	Funding	Total
Intangible assets			
Administration fees	20 000,00	Personnal contribution	
Meter opening fees	25 000,00	Apport personnel	
software	30 000,00	Loan	
formations	45 000,00	Other financing	
Deposit mark	10 000,00	ASF funding	28630000.00
Notary fees	15 000,00		
Application fees	5 000,00		
Website development	20 000,00		
Other charges	20 000,00		
Fixed assets			
Property purchase	300 000,00		
Work and development	70 000,00		
materials	27 000 000,00		

Office equipment	220 000,00		
Stock of raw materials	700 000,00		
Departure cash	150 000,00		
Total	150 000,00	Total	28630000.00

Source: Established by us

Based on the calculated amounts in the previous table, we have managed to calculate the depreciation using the straight-line method for the various assets, and it resulted in the following table :

Table 11: Amortization details

DETAILS of amortization	DURATION (year)	TOTAL
Intangible assets		
Administration fees	5	*4 000,00*
software	4	*7 500,00*
training	2	*22 500,00*
Deposit mark	1	*10 000,00*
Notaryfees	1	*15 000,00*
Application fees	1	*5 000,00*
Websitedevelopment	4	*5 000,00*
Othersexpenses	2	*10 000,00*
Tangible assets		
Estatepurchase	8	*37500*
Works and development	5	*14000*
materials	10	*2 700 000,00*
Office equipment	2	*110 000,00*
TOTAL amortization		2 940 500,00

Source: Established by us

2-The Projected Opening Balance Sheet :

The projected opening balance sheet for a project is a financial document that presents the expected financial position at the beginning of a specific project. It is used to assess the financial viability of the project and aid in the planning of required resources and investments. To do this, we attempted to establish the balance sheet for ALTA, and it resulted in the following table:

Table 12: FORECAST BALANCE SHEET

FORECAST BALANCE SHEET	
Assets	
Non current assets	
Intangible assets	180 000,00 DZD
Capitalized development costs	
Computer software and similar assets	30 000,00 DZD
Trademark rights	
Other intangible assets	150 000,00 DZD
Intangible asset amortization	47 500,00 DZD
Tangible assets	27 520 000,00 DZD
land	
building	
Other tangible assets	27 520 000,00 DZD
Tangible amortization	2 769 000,00 DZD
Financial assets	
Total assets	**27 700 000,00 DZD**
Total amortization	***2 816 500,00 DZD***
total non current assets	***30 516 500,00 DZD***
Current assets	
Inventory and work in progress	700 000,00 DZD

Receivable and similar assets	
Clients	
Other debtors	
Taxes and similar assets	
Cash and cash equivalents	60 000,00 DZD
Total current assets	**760 000,00 DZD**
TOTAL assets	**31 276 500,00 DZD**
PASSIF	
Equity	
Capital	
External contribution (ASF)	31 276 500,00 DZD
Réserves and retained earnings	
Current year's results	
Total equity	**31 276 500,00 DZD**
Non current liabilities	
Borrowings and trade payables	
Deferred tax liabilities	
Other non current liabilities	
provisions and prepaid income	
Total non-current liabilities.	
Current liabilities	
Suppliers and related accounts	
Taxes	
Treasury liabilities	
Total current liabilities	
TotaL liabilities	**31 276 500,00 DZD**

Source: Established by us

Sixth axe Prototype

1-The product

1.1-Intelligent Central Unit

The central unit of ALTA PROTECTION serves as the brain of the system, collecting and analyzing data related to CO leaks and air quality. This device serves a dual function as both a CO detector and an air quality monitor. It continuously monitors the air quality within homes to detect the presence of harmful CO gas. In addition to CO detection, the system also measures the overall air quality, ensuring a healthy and safe environment for residents.

The system takes proactive measures to ensure the safety of individuals by controlling the operation of the electro-valve. It also manages the ventilation system to ensure proper air circulation and minimize the accumulation of CO or other gas. Through its sophisticated monitoring capabilities, the central sends timely signals to the equipment, instructing them to turn on or off (ventilation system) as required in response to detected CO levels. This prompt action helps prevent the further spread of CO gas and minimizes the associated risks.

Picture 6: The central unit

Source: Established by us (our design)

1.2-Gas-stop:

Gas shut-off valve with remote control. It is a component of the automated gas leak prevention system. If an alarm is triggered by the control panel, the electro-valve intervenes and automatically shuts off the gas leak quickly. It is installed on gas appliances. This instant action prevents further risks and enhances the safety of the household.

Picture 7: The electro-valve "Gas-stop"

Source: Established by us (Our design)

2-Mobile application:

ALTAPROTECTION offers a user-friendly application to home-owners, the application provides full control of the system, even from thousands of kilometres away from home or the office. The user can view the status of devices, receive instant notifications, access the historical data, and manage automation scenarios. It also sends signals to emergency services in case of danger.

2.1-Home page

Picture 8: Home page of ALTA protection

Source: Our mobile application

The home page of the ALTA web application provides an overview of the live gas values and their corresponding status indicators. It consists of multiple cards, each representing a specific gas and displaying its current value.

2.1.1-Gas Cards

The gas cards on the home page display the following information:

Gas Name: The name of the gas being monitored.

Gas Value: The current numerical value of the gas concentration.

Status Indicator: A circular indicator that visually represents the current status of the gas.

Status Indicator Colors:

- Green: Indicates that the gas level is within a safe range.
- Red: Indicates that the gas level has reached a dangerous level.

Gas Information

Clicking on a gas card provides additional information about the gas being monitored. The gas information mayincludedetailssuchas:

- **Gas Name**: The name of the gas.
- **Danger Level**: The threshold at which the gas concentration is considered dangerous.
- **Safety Measures**: Recommended safety measures or actions to be taken in case the gas concentration exceeds the danger level.
- **Additional Details**: Any other relevant information about the gas, such as its properties or potential health hazards.

2.1.2-Gas Alert System

If any of the gases reach the danger level, the ALTA system's algorithm triggers a series of actions to address the threat and ensure user safety. The system performs the followingsteps:

- Notification: The system sends immediate notifications to the user, alerting them about the dangerous gas levels.
- Alert: Visual and audible alerts are activated to draw the user's attention to the situation.
- Safety Measures: The system provides detailed instructions on the specific actions that need to be taken to mitigate the threat. These instructions are displayed prominently on the user interface.

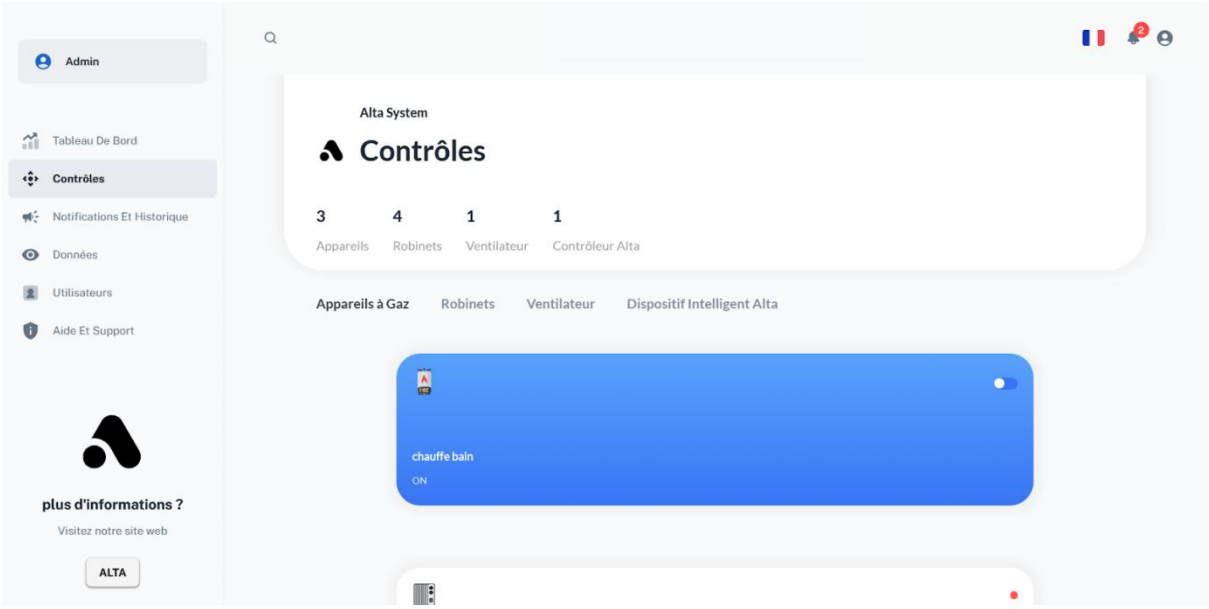
2.1.3-Security Plan Launch:

In the event that any gas reaches its danger value and triggers an alarm, the system automatically launches its security plan. The specific details of the security plan can be explained further in the documentation, describing the actions taken to mitigate risks and ensure the safety of the environment and individuals.

- Real-time Updates: The gas values and status indicators continue to update in real-time, allowing users to monitor the progress and effectiveness of the implemented safety measures.
- Continuous Monitoring: The system continuously monitors the gas levels and adjusts the alert status as needed. Once the gas concentration returns to safe levels, the alerts and notifications are automatically deactivated.

2.2-Controls Page

Picture 9: Control page of application ALTA



Source: Our mobile application

The Controls page of the ALTA web application provides users with complete control over their house's gas-related devices, offering a visually appealing design and a user-friendly interface. Users can effortlessly manage and monitor all connected devices from a single centralized location.

2.2.1-Device Cards

Each device is presented in the form of a visually pleasing card, displaying relevant information and control options. The device cards on the Controls page include:

Device Name: The name or type of the gas-related device.

Device Status: Indicates whether the device is currently turned on or off.

Control Options: Intuitive and interactive controls that allow users to toggle the device's status with a simple click.

Device Status Indicator

The status indicator on each device card provides immediate feedback on the device's current state:

- blue: Indicates that the device is currently turned on.
- White/Gray: Indicates that the device is currently turned off.

2.2.2-Device Management

With the Controls page, users have the ability to manage their gas-related devices seamlessly. The following actions can be performed:

Turning On/Off: By interacting with the control options on each device card, users can easily toggle the device's status. Whether it's turning on the heater for a cozy evening or turning off the water heater to conserve energy, users can control all devices with a single click.

Real-Time Status Updates: The device status indicator instantly reflects any changes made by the user, providing real-time feedback on the device's current state.

Complete House Control

The Controls page goes beyond individual device management and allows users to have complete control over their entire house. By conveniently organizing all devices in a visually appealing manner, users can:

View Device Status: The status indicators on each device card enable users to quickly assess which devices are currently on or off.

Manage Multiple Devices: Users can effortlessly control multiple gas-related devices from a single screen, making it easy to manage their house's gas-related operations.

Intuitive Interface: The user-friendly interface and intuitive controls make it simple for users to interact with and manage their devices.

Visually Appealing Design

The Controls page is designed with aesthetics in mind, offering a visually appealing layout and pleasing color schemes. The use of modern design principles, clean lines, and elegant typography create an engaging and visually enjoyable user experience.

By providing complete control over the house's gas-related devices in a visually appealing and user-friendly interface, the Controls page of the ALTA web application empowers users to have their entire house at their fingertips.

2.3-Notification and History Page

Picture 10: Notification and history page of the application ALTA

Source: Our mobile application

The Notification and History page of the ALTA web application provides users with a comprehensive overview of all system alerts and events that have occurred. This page offers a convenient way to browse through past notifications and track the history of the system's activities. Each notification card displays relevant information, including the type of alert, timestamp, location, and date.

2.3.1-Notification Cards

Notifications are presented in the form of cards, with each card representing a specific alert or event. The notification cards on the Notification and History page include the following details:

Alert Type: Indicates the nature and severity of the alert. There are three distinct colors used to differentiate the alert types:

Red: Represents high-risk alerts, such as a gas leak or gases reaching dangerous levels.

Yellow: Indicates medium-level alerts, such as CO2 levels approaching recommended limits.

Gray: Represents low-level alerts, such as slow internet or prolonged high gas consumption.

Timestamp: Displays the exact time when the alert or event occurred.

Location: Indicates the specific location associated with the alert or event.

Date: Displays the date when the alert or event took place.

Color-coded Alerts The use of distinct colors for the notification cards allows users to quickly identify the severity of each alert or event. This visual differentiation helps users prioritize their attention and take appropriate actions based on the level of urgency.

2.3.2-History Tracking

The Notification and History page serves as a comprehensive log of all system activities, providing users with a detailed record of past alerts and events. By browsing through the notification cards, users can review the history of the system and gain insights into various occurrences over time.

2.3.3-User-Friendly Interface

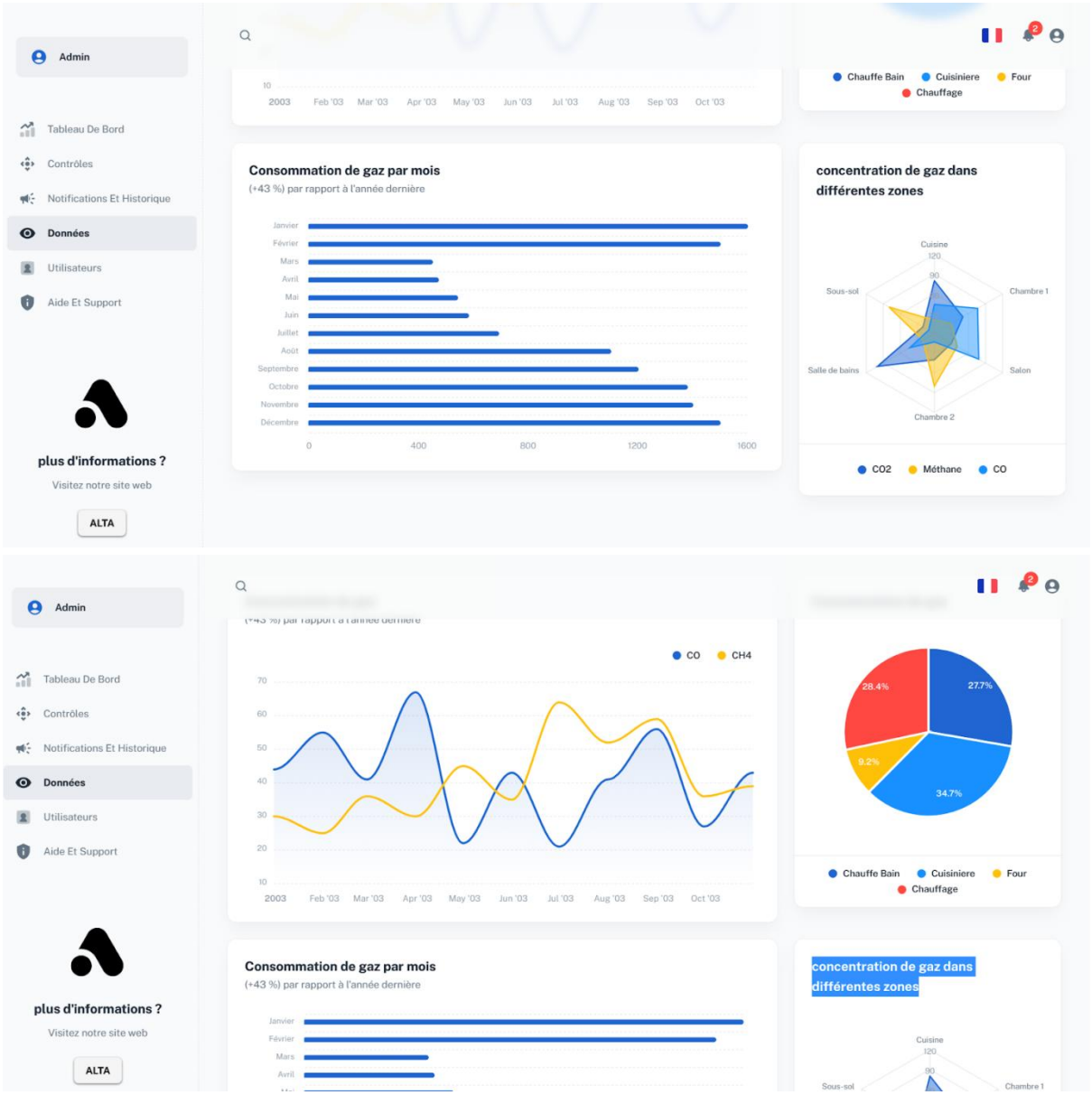
The Notification and History page is designed with a user-friendly interface, ensuring that users can easily navigate and access the information they need. The cards are organized in a visually pleasing manner, allowing users to quickly scan through the notifications and locate specific events of interest.

2.3.4-Empowering Users

By consolidating all system alerts and events in one place, the Notification and History page empowers users to stay informed about their system's activities. It provides a comprehensive overview of past occurrences, enabling users to track and analyze trends, identify potential issues, and take appropriate actions when necessary.

2.4-Data Page

Picture 11: The data page of application ALTA



Source: Our mobile application

The Data page in the ALTA web application provides users with valuable insights and tools to track and monitor the system's performance and analyze various aspects of gas concentration and consumption within their home. This page offers a range of interactive data graphs and useful visualizations that enable users to gain a deep understanding of their home's gas-related activities.

2.4.1-Line Graph: Concentration de gaz

The line graph on the Data page represents the "Concentration de gaz" (Gas Concentration) in the house over a selected time period. This graph allows users to visualize the levels of different gases present in their home at any given timestamps. By examining the fluctuations and trends in gas concentration, users can gain insights into potential gas leaks or abnormal gas levels that may require attention.

Pie Chart: Consommation de gaz

The pie chart on the Data page displays the "Consommation de gaz" (Gas Consumption) in the house, providing users with an overview of which devices are utilizing the most gas. This visualization allows users to identify the major contributors to gas consumption within their home and make informed decisions about optimizing gas usage.

Bar Graph: Consommation de gaz par mois

The bar graph on the Data page showcases the "Consommation de gaz par mois" (Gas Consumption per Month), presenting users with a monthly breakdown of gas consumption. This graph enables users to track and compare gas usage patterns over different months, helping them identify any unusual spikes or trends in gas consumption.

Polar Graph: Concentration de gaz dans différentes zones

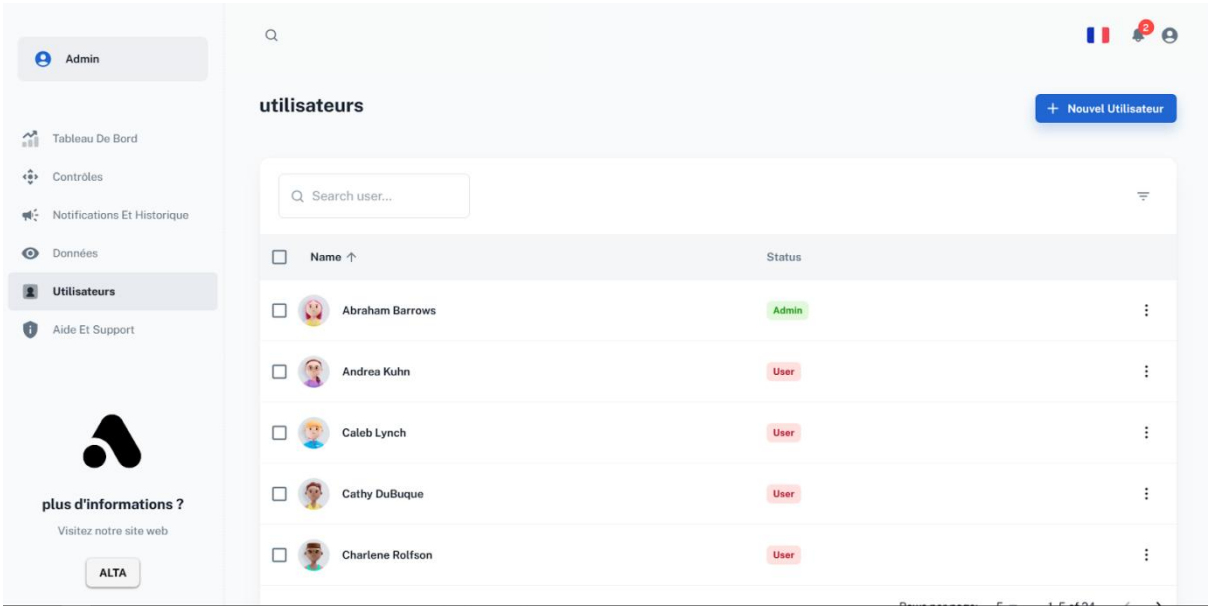
The polar graph on the Data page offers insights into the "Concentration de gaz dans différentes zones" (Gas Concentration in Different Zones) of the user's house. This visualization represents the concentration levels of different gases in various areas or zones within the home. By observing the polar graph, users can assess the distribution of gases in different zones and detect any variations or anomalies that may require attention.

2.4.2-Empowering Users

The Data page provides users with powerful tools and visualizations to gain a comprehensive understanding of gas concentration and consumption within their home. By analyzing the data graphs and leveraging the interactive features, users can make informed decisions, detect potential issues, and take proactive measures to ensure a safe and efficient gas environment.

2.5-User page

Picture 12: User page of our application ALTA



Source: our mobile application

The Users page in the ALTA web application provides the admin with the ability to manage and control the access and permissions of connected users. This page allows the admin to view and configure user settings, ensuring that each user has appropriate access and restrictions based on their roles and requirements.

2.5.1-User Management

On the Users page, the admin can see a list of all connected users, including their usernames or display names. This provides an overview of the user base and allows the admin to identify and manage individual user accounts.

Access and Permissions

The admin has the authority to define and control the access and permissions for each user. This ensures that users have the appropriate level of access and functionality based on their roles and responsibilities within the system.

For example, the admin can assign different levels of access to users, such as:

- Admin User: The admin user has full control and unrestricted access to all features and functionalities of the ALTA system. They can configure settings, manage devices, view and analyze data, and perform administrative tasks.
- Regular User: A regular user may have limited access and permissions. They can receive notifications, view data graphs and alerts, and interact with certain features of the application. However, they may not have the ability to control devices or modify system settings.
- Restricted User: Restricted users, such as children or guests, have limited privileges. They may only be able to receive notifications and view data without the ability to control devices or access sensitive settings.

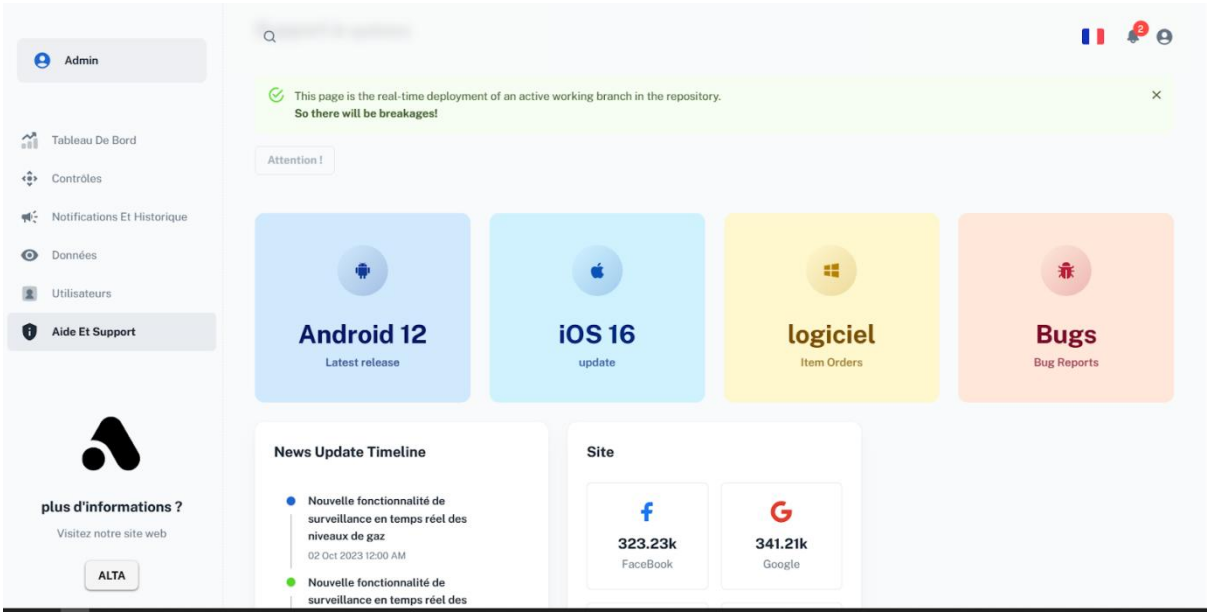
2.5.2-Customization and Flexibility

The Users page provides the admin with flexibility to customize user permissions and access levels based on their specific requirements. This ensures that the system remains secure, and users are granted appropriate privileges while maintaining control over the ALTA system.

By managing user access and permissions effectively, the admin can create a personalized and tailored experience for each user, ensuring that they have access to the relevant features and functionalities while maintaining the desired level of control and security.

2.6.Help and Support Page

Picture 13: Help and support page of the application ALTA



Source: Our application

The Help and Support page in the ALTA web app provides users with access to various resources, updates, surveys, and news related to the system. This page serves as a central hub for users to stay informed, provide feedback, and seek assistance when needed.

2.6.1-System Updates

The Help and Support page keeps users informed about the latest updates and enhancements to the ALTA system. Users can access information about new features, bug fixes, security patches, and performance improvements. This ensures that users are aware of the system's evolving capabilities and any changes that may impact their experience.

2.6.2-Surveys and Feedback

To gather valuable insights and feedback from users, the Help and Support page includes surveys and feedback forms. Users can participate in surveys to share their opinions, suggestions, and experiences regarding the system. This feedback enables the development team to understand user needs better, identify areas for improvement, and make informed decisions for future updates and enhancements.

2.6.3-News and Announcements

Users can stay up to date with the latest news and announcements related to the ALTA system on the Help and Support page. This includes information about upcoming events, maintenance schedules, policy changes, and other relevant news. By providing users with timely and relevant information, the Help and Support page ensures transparency and keeps users engaged with the system.

2.6.4-Support Resources

The Help and Support page also offers access to support resources, such as user guides, FAQs, troubleshooting tips, and contact information for customer support. This empowers users to find solutions to common issues independently and seek assistance when needed. The support resources are designed to provide users with self-help options and ensure a smooth user experience.

2.6.5-User Community

To foster a sense of community among ALTA users, the Help and Support page may include a user forum or discussion board. This platform allows users to interact with each other, share experiences, ask questions, and provide support. The user community enhances collaboration and knowledge-sharing among users, creating a supportive ecosystem around the ALTA system.

Conclusion

In a constantly evolving world, security and protection have become crucial concerns. ALTA Protection project positions itself as a major player in innovation in this critical field. Our advanced security system and revolutionary mobile application are designed to save lives and provide unparalleled peace of mind.

However, our vision extends beyond individual protection. We aspire to broaden our impact and serve the world as a whole. By aiming to grow and encompass all areas of security and protection, we seek to contribute to building a safer and more resilient future. Our ultimate goal is to create a smart security ecosystem that connects not only households but also businesses, communities, and cities.

By positioning ourselves as a key player in the smart home ecosystem, ALTA Protection aims to expand its influence to encompass smart cities. We believe in the power of technology to transform our urban environments into safer and more sustainable spaces. Through collaboration with local authorities, partners, and industry stakeholders, we strive to create connected cities where security is integrated at all levels, from infrastructure management to citizen protection.

We are driven by the conviction that every individual, regardless of their place of residence, deserves to live in a secure environment. Our intelligent security system is designed to be accessible and affordable, so that everyone can benefit from it. We hope that our innovation will have a positive impact on the daily lives of millions of people worldwide, bringing peace of mind and contributing to the prevention of CO-related accidents.

The ALTA Protection project embodies technological innovation in the service of security and protection. We are committed to making a significant difference in the lives of individuals by providing advanced solutions and expanding our global impact. With our dedication to excellence, we aim to build a safer future for all, where no one is left unprotected from the dangers of carbon monoxide.

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Appendices

Business Model Canvas

KEY PARTNERS

- Sonal-gaz
- Suppliers
- Government
- Firefighters
- Investors
- Technological companies
- sellers

KEY ACTIVITIES

- Production
- Development of the application
- Sale
- Marketing
- Distribution

KEY RESOURCES

- Technicians in electronic
- Engineers
- Computer scientists
- Machinery

VALUE PROPOSITIONS

- The proposed values
- Real-Time Monitoring and Alerts
- Convenience and Automation
- Energy Efficiency
- Integration with Smart Home Ecosystem
- Peace of Mind

CUSTOMER RELATIONSHIPS

- After Sales
- Community Gathering
- Personalized offer
- Website offers

CHANNELS

- Word of Mouth
- Social Media
- The fairs
- Emails
- website

CUSTOMER SEGMENTS

B2B
- Companies producers devices to facility Gas

B2G
- State

B2C
- Households
- Public Companies
- Private companies

COST STRUCTURE

- Production
- Marketing
- Infrastructure
- Packaging
- R&D
- Rh
- Développement de l'application
- Distribution

REVENUE STREAMS

- Sales to households
- Business sales
- Sonal-gas
- Service delivery
- License