17.10.2021

MOBILE AI APPLICATION SUSTAINEER

BUSINESS PLAN

INDEX

TUM AI Mackathon
SUSTAINEER

1.EXECUTIVE SUMMARY

SUMMARY

Sustaineer is launching a new initiative to combat food waste by coordinating circular value chains through big data&AI technology. It is a mobilization platform is built on the core principles of the "Too good for the bin!" [1]national initiative as a baseline campaign that is designed to spearhead a call for radical change in the food sector, tackling access to healthy, sustainable and affordable food by combating food waste.

UNIQUE VALUE PROPOSITION (UVP)

Recipe recommendation system based on the ingredient image recognition. Additionally, a user can support a local charity, the Münchner Tafel (food bank Munich),

---

[1] Access at: https://www.zugutfuerdietonne.de/navigation/sub-footer-navigation/english https://www.bmel.de/EN/topics/food-and-nutrition/food-waste/initative-too-good-for-the-bin-food-waste-zgfdt.html

by making a donation in the app. Sustainaineer is collaborating with charities and nonprofits all across Germany to help those most in need.

TARGETS/OBJECTIVES

1. Incentivize people to make smarter purchasing decisions with AI, food processing and food storage practices

2. Provide business opportunities to enhance supermarket operations, help the bottom line and most importantly improve environmental sustainability

3. Help HORECA sector to reduce operational expenses and redistribute surplus by reducing food waste

4. Improvement of citizens' perception on urban biowaste as local source of valuable materials

5. Development of new business and organizational models for biowaste valorization (Creation of bio-nano materials). Boost circular economy.

OUR VISION

Provide service of uncompromising quality to develop mutually beneficial and enduring collaboration in all the commitments that we make ensuring that it our AI technology offers appropriate weight to social and environmental impacts.

OUR MISSION

Foster long-term relationships instead of isolated short-term transactions. To ensure the full conversion to circular economy key stakeholders, the entire network of trusted partners and value chains including companies, NGOs and governments have to collaborate to successfully deploy AI core steps for the innovation: data collection, data engineering, algorithm development and algorithm refinement.

THE SERVICE WE PROVIDE

Sustainaineer is a consciously value-driven app that is engineered to efficiently disseminate AI technology in the service of a circular food economy.

2.PROBLEM ANALYSIS

Globally we waste 1.2 bn tonnes of food every year of value of 750 billion USD. In Germany alone we throw away 12M tonnes of food per year. [2] There's over restaurants 15M worldwide who doesn't know how to prevent it.

COVID-19 REPERCUSSIONS ON FOOD INDUSTRY

According to a survey conducted by the Future Food Institute[3], In Germany, during pandemic people were more likely to increase their consumption of ready-made meals, canned food, and cake and biscuits, and decrease their consumption of fish and dairy products, suggesting that "eating out" was substituted with convenience food and sweet snacks instead of cooking a meal from scratch.

Behavioral change in buying consumer patterns: social distancing measures, mask-wearing enforcement, safe queuing and crowd control have contributed to the spike of BOPIS shopping-framework (buy-online-pick-up-in-store) or delivery options. Given the soaring number of food delivery trend across the world, we have to make sure we build out sustainable delivery infrastructure.

ADVICE, RECIPE RECOMMENDATION GAP LEADS GEN. Z PEOPLE TO RELAY ON SOCIAL MEDIA PLATFORMS SUCH AS INSTAGRAM, TIKTOK

---

[2] Bundesministerium für Ernährung und Landwirtschaft (BMEL), Federal ministry of Food and agriculture data, 2019. Access at: https://www.bmel.de/EN/topics/food-and-nutrition/food-waste/national-strategy-for-food-waste-reduction.html

[3] https://www.frontiersin.org/articles/10.3389/fnut.2021.635859/full

Young people want a narrative around not only healthy eating (vegetarianism) but also to be under the guidance of responsible food disposal. Environmentally-savvy people demand transparency across different levels of food value chain on how food is processed, as well as more sustainable options for ordering food.

3.SOLUTION

End result with SUSTAINAINEER app: since consumers become aware of the carbon footprint of the food supply chain (CO2 emissions produced counter widget), they decrease consumption of meat, cheese and eggs that have the highest carbon footprint. The user of the app can track the amount of funds on a daily/weekly/monthly/yearly saved up while managing food waste and buying goods that are about to expire on a discount. The user widget in the app includes a counter with an amount fo food rescued in kgs. With an auto-generated consumption report, the user tends to eat more healthy, switch a diet type to a more environmentally-friendly one.

We've explored an increasing trend of gamification across all industries aimed to build new business customer interaction process.

Starbucks used Gamification tactics to enhance the customers' experience and to boost sales as well. Players register for My Reward through an application. Every time they purchase a Starbucks product, they accumulate stars. But the game does not stop here. There are three "levels" depending on the degree of user loyalty. More frequent visits to a Starbucks store is awarded through an upgraded level.

STRUCTURE OF THE SOLUTION

Contest mechanism: During the development of the contest, the customer can proceed through three different levels:
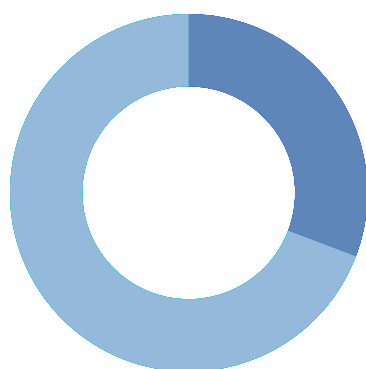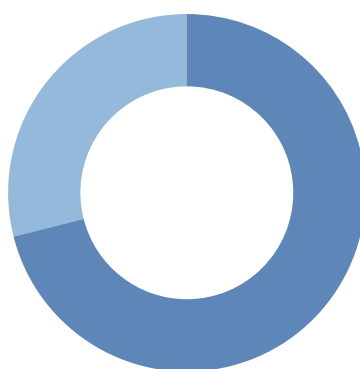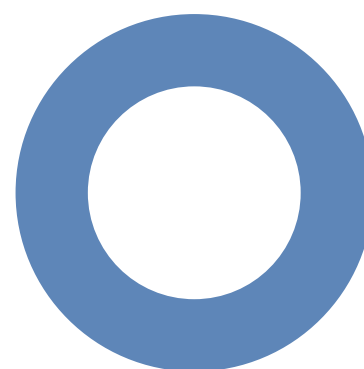
Level 1   **Level 2**   **Level 3**

CARBON CAPTURER   **CLIMATE CADET**   **CHAMPION**

The basic language of Gamification used will encourage him to advance through the levels and obtain the final prize. Indeed, it is very important that the customer understands the importance of his contribute and, to do this, he has to be rewarded.

The app auto-generates a random dish ID which the participant have to write down in the comments of their Intagram/TikTok post or any other way while taking a picture of the cooked meal based on a recommendation system of SUSTAINEER app.

CUSTOMER JOURNEY

Customer journey starts with the recognition of the need to reduce food waste. The app is based on the gamification, motivated users are driven to suggest the app to more and more supermarkets that expands our value chain. Consumers generate more profit than on average because they are willing to become regular customers in the stores that are involved on the initiative. Relationship between an app and consumers both as consumers and supermarkets interdependency is strengthened. During the first quarter we are planning to measure the retention rate while the user experiences the app. Lastly, advocacy phase when user makes it a habit and provides rating for an app or recommend the app to others.

4.COMPANY

TYPE OF BUSINESS STRUCTURE

A limited liability company (LLC) is a preferred way to implement our business model. It has and advantage of customizing its tax structure, the business can grow in profit and risk since there's personal liability protection.

LOCATION OF COMPANY

Headquartered at Munich, Germany.

TEAM ORGANIZATION

Although we never met in person, we have successfully worked together across different regions and countries. To do that, we used some key online tools:

1. Microsoft Teams

2. Microsoft Azure

3. Trello

4. Github

5. Kaggle

6. Slack, discussion on the topics on the agenda

7. Assignment of the individual tasks to be carried out for the next meeting.

5.MARKET ANALYSIS

MARKET FORECASTS

Factors like the Internet fo Things (IoT) are contributing to advancing rate of development of AI and ML. The IoT network of

SWOT ANALYSIS

The following analysis has been carried to test company's potential from internal (finding company's strengths and weaknesses) both from an external perspective (discerning opportunities and threats taking place in this business environment). From this analysis, we ahem taken weaknesses into consideration and have put an action plan in place to rectify and perform above them.

S
- Wide community fo final customers
- Real-time monitoring
- Loyalty of the partners and customers
- Efficient business model

W
- Increasing attention to sustainability and environmental impact
- Food waste management market is not mature

O
- Low brand recognition
- Strategic government initiatives (support) for AI in sustainability

T
- Other anti-food-waste apps
- Slow adoption rate of new technologies and products price range do not favor our intended plan to implement smart bins, segregators and refrigerators with cameras and sensors pre-installed
- Low level of awareness about food-waste externalities

6.MARKETING STRATEGY

TARGET MARKET

Students and environmentally conscious consumers, customers, mid-size restaurant chains, large grocery stores. Based on Dehoga Bundesverband 2019 data, there's 71.800 restaurants and 11.146 potential hotels customers in Germany. In 2021, the estimated revenue of the industry is €46.8 billion.

COMPETITOR ANALYSIS

There's currently no market leader tacking food waste issue.

„Too Good To Go" and „Karma" apps reduce food waste by selling off food items at a discounted rate that retailers or restaurants couldn't sell via their normal channels.

„Phenix „ app is more B2B sales-oriented such that it collects food waste from other businesses, charging a fixed commission based on the waste-management profit achieved by distributors.

„OptiMiam" is a French start-up created to reduce food waste and help consumers in finding cheap food. Restaurants and bakeries register their business on the OptiMiam website and provide deals on products that are near their expiration or best-used-by date. People looking for lunch or a snack can then log in on their smartphone and see the discounts and deals at nearby bakeries and restaurants.

„Olio" is an English start-up which connects neighbours with each other and with local businesses so surplus food can be shared, not thrown away. Shop owners, by contacting them, will get a food-safety-trained Food Waste Hero to collect surplus food from their store, preventing it from being wasted. Furthermore, on the website, Olio offers a complete list of things that each person should do to increase the popularity of this initiative. Not just promotions through Facebook, Instagram or newsletters but also relying on distribution of leaflets, posters, fridge magnets as well as the organization of public anti-food-waste events.

OUR COMPETITIVE ADVANTAGE

Sustainaineer is easier to use for both consumers and customers. So far there is no technology yet on the market that analyses your consumption patterns to find the way of decrease your carbon footprint without significant dietary changes. In the long term of data collection process, SUSTAINAINEER will have a database of its' customers that would have their personas together with consumption reports and suggested diet based on their products preferences.

CREATE A LANDING PAGE WITH A PERSONALIZED EXPERIENCE

Application assistant that manages daily food consumption and daily waste generated. Assistance advices the user on how to properly store a product so that it has better longevity or quality (regulation refrigerator temperature, etc.).

MARKETING CHANNELS

Bottom-up and top-down (macro) strategies: Sustainaineer sells directly to consumers and operates through strategic partnerships with supermarkets both restaurants to expand client base and filter down target consumers.

It is a viable investment opportunity because consumer staples through all types of economic cycles remain in demand regardless fo the economy's movement.

The email-marketing is one of the most common channels used. Keeping a strong interaction with the customers through newsletters will allow SUSTAINAINEER to present their own offers and contents.

APP RATING

Application based on AI technology relies on consumer trust and recurring usage. Because of privacy concerns credibility plays a key role run creating and maintaining our business.

PRODUCT GROWTH

In the first place, our business goal is to increase interest and participation of actual users. Then, increase web app visits, decrease churn rate and increase publicity. These particular bottlenecks occur at the beginning of most app deployment business processes.

Identification of potential partners:

1. Owners of supermarkets have been taking over different technologies during pandemic and they might try exploiting every opportunity including AI image recognition to stand out and create consumer awareness.

2. Advertising partnership with sustainable producers such as Pela (e.g. Lomi, the One-button composting machine) aimed to enhance recycling and decrease waste incineration

3. Send an e-mail and a notification on the app. To each customer can take part to the contest and he will be assigned with a unique identification code.

7.FINANCIALS

STARTUP COSTS

Business expansion: Once our customer base reaches 5.000 threshold of sustainable pioneers and we are making consistent cash flow month after month, we will consider setting up our own company based on the monthly research that we will conduct to discover if we can have viable market options outside of Germany.

Initial capital (Llc) 25.000 EUR

Notary services with VAT - 1.011 EUR

REVENUE MODELS

Free application with no subscription model that gains credibility with customers and has the potential to generate profit, grow steadily, and carry a moderate amount of risk.

We have decided to concentrate our free app monetization strategy on the following revenue streams:

1. Advertising (via banner, videos that propagate environmentally-friendly message, incentivized ad). Recruitment campaigns video to become a FutureFoodMaker with EIT Food.[4]
2. Commission on all items that were purchased in the supermarkets (When a user selects an item that is available in his/her refrigerator, consumer is being proposed with a recipe recommendation based on the available outstanding ingredient list. If the user lacks a certain ingredient or needs more of it, the user click on „Order more" button and is being redirected to metasearch Supermarkets engine that filters out the product by price, quantity , distance and delivery type).

---

[4] Campaign commissioned by EIT Food, the world's largest food innovation ecosystem, supported by the European Institute of Innovation and technology. Access at: https://eit.europa.eu/our-activities/opportunities/become-futurefoodmaker-eit-food

3. Selling to supermarkets user information (shopping habits, consumption patterns) that is used to target customers with personalized vouchers and offers. Increasing the inflow of potential customers. Social scores in the app incentivize users to have a loyalty card or to shop online which alleviates Data mining process for supermarkets
4. Ingredient image recognition and recipe/storage suggestion, food waste real-time data being sold to companies that are interested in our services
5. Supermarkets promotion of recommended recipes based on a local landfill data.

FUNDING REQUIRED

Smart waste management through the installation of smart waste bins is expected to grow at a compound annual growth rate (CAGR) of 64.1% to touch US$5.42 billion in 2025, according to a latest research from Frost & Sullivan.

To boost sustainability credentials of an area, substantial and arguably prohibitive investment for smart bins has to be realized. We would like to incorporate smarts bins into the waste management system because these are not humble container anymore but a multi-faceted communications device, monitoring instrument. Government funding for recycling smart bins will be essential to steer waste away from landfills. Computer vision algorithm recognizes images and is able to identify material in front of its' camera and guides the person where to place waste.

FEASIBILITY ANALYSIS

ECONOMIC FEASIBILITY

Costs and expected benefits that Sustainaineer would incur in developing our solution.

Variable costs involve to the Contest prizes offered and shipping costs .

Level	Item	Unitary Cost	Quantity	Total
Carbon capturer	Reusable water bottle, canvas shopping bag (shipping costs incl.)	8.00 EUR	500	4000 EUR

Level	Item	Unitary Cost	Quantity	Total
Climate cadet	Carrefour voucher	25.00 EUR	125	3125 EUR
Champion / Ambassador	Amazon Gift card	100.00 EUR	50	5000 EUR

Additionally, we've considered fixed costs to set up the contest to be approximately 2000 EUR. That comprises of drafting regulation, guaranty on the prize pool, ministerial filing, notarial deeds, awarding prizes and the closure of the initiative. The total costs for the social badges initiative are 14.125 EUR.

TECHNOLOGICAL FEASIBILITY

Design and implementation roll-out of the app which includes different sections:

1. Microsoft Azure costs:

    At the first stage we expect to have approximately 1000 customers.

    90k transactions for 1000 users /month = 154.26 EUR[5]

    205.608 EUR per month for training cost

    On average the user makes 3 transaction per month.

    Storage: for 3-month initial plan 5000 Images threshold will satisfy our demands - 3 EUR/month.

2. API Costs: 85,35 EUR API monthly [6]

3. Estimated Cost of Web-App: 30 EUR

---

[5] Microsoft Azure Subscription Fees. Access at: https://azure.microsoft.com/en-us/pricing/details/cognitive-services/custom-vision-service/

[6] API fees. Access at:https://rapidapi.com/spoonacular/api/recipe-food-nutrition/pricing

LONG-TERM GOALS FOR SUSTAINAINEER

While ramping-up, we are planning to develop our own API that would decrease OPEX till 15 euros. Moreover, we will build our own dataset and own model using open-source models (e.g. YOLOv5) without further reliance on Microsoft Azure.

Overall Initial Cost forSoftware Development: ±474 EUR for the first phase (Q1).

Once we analyze the demand and amount of customers for our web-app, SUSTAINAINEER IOS and Android app would be deployed in App Store, Play Market during the second phase (Q2). We'll distribute our app with IOS and Play market Developer programs (under 100$/year). Development and launch of a mobile app as an individual, and only as things grow and it make sense we form a company later.

Our final end goal is to make motivation in the development of sustainable innovation not merely economical but this of the means to bring attention to this mission. Once people get their social recognition badges, they might become partners with future IT collaborations. Once SUSTAINAINEER gains more credibility and proves itself as an efficient solution, we assume to have government support that can potentially give us the chance to concentrate on a bigger picture of this social campaign.